FLIGHT

The AIRCRAFT ENGINEER AND AIRSHIPS

FIRST AERONAUTICAL WEEKLY IN THE WORLD

Founded in 1909 by Stanley Spooner

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DIARY OF CURRENT AND FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in this list:—

May 7-12. International Air Post Exhibition, Royal Horticultural Hall, Westminster.
May 17-June 2. Royal Tournament, Olympia.
May 18. Entries close at ordinary fee for King's Cup Race.
May 21. Air Display, Loughton Aerodrome, Essex.
May 24. Empire Air Day.
May 26. Opening of Doncaster Airport.
May 27. Deutsch de la Meurthe Cup.
May 30. Entries close at double fee for King's Cup Race.
May 31. Conversazione and "Stalling." Wilbur Wright Memorial Lecture, by Prof. B. Melvill Jones, before R.Ae.S.
June 1. Entries close at 12 noon for London-Melbourne Race.
June 2. Brooklands Air Race Meeting.
June 3. London Aeroplane Club Garden Party, Hatfield.
June 9. Reading Ae.C. Annual "At Home."
June 16. R.A.F. Reserve Flying Club Annual Flying Display, Hatfield.
June 23. Lancashire Ae.C. Air Display, Woodford.
June 23. Henly Rally, Heston Airport.
June 16. Royal Air Force Flying Club Display. Hatfield Aerodrome.
June 30. Royal Air Force Display, Hendon.
July 3-9. 4th International Congress for Applied Mechanics, Cambridge.
July 7. Opening of Leicester Airport.
July 8. French International 12-Hours Reliability Trial.
July 13-14. King's Cup Race. Start and finish at Hatfield.
July 21. Round the Isle of Wight Air Race.
July 21-22. French Grand Prix.
July 28. Bristol and Wessex Ae.C. Garden Party.
July 29. London-Sherburn Race (York County Aviation Club)

"Furies" and "Bulldogs"

WHILE we should like to see the number of our fighter squadrons increased, we must not forget the equally important question of the machines in which our men fight. As Lord Trenchard recently said, a good squadron can cut its way through a lot of inferior material "like a knife through butter." Capt. Cunningham-Reid, M.P., does not intend that the public shall forget this question of fighter performance. He sometimes amuses the House of Commons by telling them of a great discovery which he has made, namely, that the Air Ministry has in hand a machine much better than those served out as equipment to the squadrons. That, we are afraid, will always be the case. In fact, we should be much more afraid if it were not so. Research never stands still, and no sooner has one type been approved as standard equipment than the Air Ministry begins to search for something better, and usually finds it before long. Consequently, it is quite true to say that nearly every type of fighter has become obsolete before it has been supplied to all the squadrons for which it is destined. The remark is an epigram which sounds very damnatory of our present system, but in reality is high praise of our ceaseless search for something better.

Still, though we approve this search, we cannot say that we have ever yet been satisfied with the pace at which the latest type is supplied to the squadrons. It was a painfully slow matter getting the "Bulldog" out to all of them, and one year in the Air Exercises it was ludicrous to see the way the obsolete "Siskins" tried to tackle the "Harts." It is to be hoped that the "Gauntlet" will be more expeditiously distributed. If Capt. Cunningham-Reid can do anything to help in speeding this up, he will deserve gratitude.

At the same time, the public must not forget what the gallant M.P. seems to forget, namely, that we must have more than one class of fighter, and we cannot expect the same performance from all of them. At present we have three types, the two-seater "Demon," which is about to be supplied to No. 41 (Fighter) Squadron in addition to No. 23 F.S., the interceptor or day-fighter "Fury," and the standard day-and-night fighter "Bulldog." The Gloster "Gauntlet" has been selected as replace-

ment for the "Bulldog." Standard day-and-night fighters are required to have rather more air endurance than is allowed to the interceptors. They cannot climb so fast, but they can go up earlier and patrol for a longer time, and this ability may sometimes be essential, especially at night. The night fighter cannot wait until the searchlight points out the raider before he takes off. He must be up in the air already, patrolling his zone, before ever the raid is at hand, and for that he needs a fair supply of fuel. Were the Fighting Area equipped with nothing but interceptors, we might fall victims to something which a machine with less spectacular performance might have averted. It is always rash for politicians to wax hot on a subject which they have only partially studied.

Defence and Attack

DEFENCE is the best form of attack, said the time-honoured maxim of war, and the flippantly-minded expressed the same sentiment in the doggerel line

"Thrice is he blessed who hath his quarrel just,
"But four times he who gets his shell in fust."

Now, it appears that General Weygand and the French military staff are discarding that old principle and are placing their trust in defence. In the early days of the war the collapse of Liége and Namur before the heavy siege artillery of the Germans seemed to confirm the wisdom of reliance upon the attack, but later on Ypres and Verdun showed the possibility of successful defence, and for the next three years attacks by infantry and artillery against barbed wire and machine guns always proved immensely costly to the attackers. But for the tanks and the constant pressure of the British Navy, the war might not have ended victoriously for the Allies even in 1918.

Accordingly the French military experts now have decided to place their reliance on ground defences, and feel confident that these are sufficient to ward off any German menace in the immediate future. They claim, as part of their plan, perfect freedom to maintain such forces as they deem adequate to secure the safety of their own frontier, and this decision of theirs has to all appearance driven the last nail into the coffin of the Disarmament Conference. The impression is even getting abroad that it will now not be much use to pursue Mr. Baldwin's plan for calling a special conference for the regulation of air armaments. On the other hand, the idea is gaining ground that the Disarmament Conference may before it dissolves draw up some international rules to forbid inhumanities in warfare. We have always held and preached that this would be the most useful line for the Conference to follow; and if deliberate attempts to slaughter civilian populations from the air are now to be forbidden by international agreement, the Conference will have done some really useful work. We have repeatedly given reasons, based on military history, on human psychology, and on ordinary commonsense, why such humanitarian rules of warfare are likely to be generally observed by all belligerents who retain a modicum of sanity.

In the air, however, no lines of barbed wire and machine gun "pill boxes" are possible. We are not suggesting that the aerial bomb will be able to demolish ground works which defy the artillery, for such a result hardly seems likely. The question which interests us is whether the old maxim of relying mainly on the attack will persist in air warfare after it has been abandoned in ground warfare. Though the bombers may not be able to break down the defence line they may seriously hamper the defence by destroying their sources of supply and their lines of communication. For Great Britain the more particular problem is the extent to which our air defence by fighters, searchlights, A.A. guns, and very excellent communications between them all, will be able to defeat the attacks of enemy bombers. We believe that such attacks can be made so costly to the enemy that he will not persist in them for long; but that means a very strong force of fighters. We should like to see our force of fighters largely increased, and at the same time all the guns and searchlights handed over to the direct care of the Air Ministry. Then perhaps we shall find that in the air, too, defence may be stronger than attack.

Amateur Efficiency

THE standard of efficiency in club-trained pilots has been the subject of both praise and criticism in equal proportions since the days when the light aeroplane clubs first saw the light. Those who praise forget, perhaps, that the results have been in some measure due to the excellent characteristics of the present-day light training machine. Those who criticise forget the difficulties under which the club instructor must work.

Only the most perfect tutor can remember the weaknesses of each pupil in a class of several hundred, and a club-trained pilot may very easily and unknowingly develop the most glaring faults after he has left the "nursery." All clubs encourage "refresher dual" at regular intervals, and one of the oldest has been working for some time with a most thorough system of categories with special tests for entry into each. There the keen member progresses from solo work to passenger carrying, short cross-country flights, and finally into the "go anywhere" category.

Another means of improving efficiency lies in the organisation of really interesting and thorough competitions covering general air pilotage. Provided that enthusiasm can be raised and sustained, this is perhaps the better method, and in the club notes this week a particularly good example is mentioned. Not only are the tests designed to produce a pilot who will never find himself in an impossible position and whose general flying technique will be of the best, but they include operations that are often ignored by the club pilot having a ground staff at his beck and call. Engine starting, inspection after a heavy landing, opening and folding wings, picketing after a forced landing—all these are included. Any competition or series of tests likely to improve still further his standard of flying should be supported by every amateur pilot.

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"ÉCHELON, STEPPED UP"

A DIFFICULT FORMATION: It is a testimony to the skill of the A.S.T. pilots that, flying such widely different types of aircraft, they could maintain their positions so well at Hamble before the camera of our photographer. (FLIGHT *Photo.*)

DETROYAT *VERSUS* DORET

"Greek Meets Greek" again at the Vincennes Meeting, where Individual Aerobatic Displays and Contests were the Features of the Day

AN aerobatic contest between Michel Detroyat and Marcel Doret was the principal attraction of the aviation meeting at the Vincennes Polygon on April 29. This contest was the result of a challenge by Doret after Detroyat had won his international match against Fiesler last autumn.

Perfect weather attracted a record crowd, and some 150,000 spectators were ranged deep in the enclosures and packed in the three grandstands. About ten miles of fencing was, incidentally, necessary for the partitioning of the Polygon.

The meeting was organised and managed by the Air Propaganda Association under the auspices of *Le Petit Parisien*, and the programme also included a competition for the International Feminine Aeronautical Aerobatic Cup, the exhibition of various types of machines and power gliders, simultaneous jumps of six parachutists from three different machines, and a stunting exhibition by Gerd Achgelis, the German pilot.

Shortly after 11 a.m. the meeting opened with the International Feminine Cup event. For this there were also considerable cash prizes offered by the management of the meeting, and there were two entries, Helene Boucher, flying a Morane-Saulnier high-wing monoplane, type 230 (230 h.p. Salmson radial), representing France, and Liesel Bach, piloting a Klemm low-wing monoplane (150 h.p. Siemens radial). Although the French *aviatrix* gave a remarkably good exhibition, she had not had the training and experience of her German competitor, who won the event.

The afternoon programme opened with the "exhibition." First, the ancient and honourable Farman pusher, of pre-war construction, and known as "the bird cage," encircled the field with the "old timer," Louis Gaubert, at the controls. It presented a strange contrast to the Pobjoy Comper "Swift," which, piloted by Georges Reginensi, flew at several times its speed. Maryse Hilz, who had just returned from her Paris-Tokio-Paris flight with her Breguet all-steel two-seater, sesquiplane, type 27, and the Caudron which recently established a new record, were among the machines that were demonstrated. The "gliders" were represented by two machines with 6 h.p. engines constructed in Belgium under a licence from the B.A.C., piloted by Henry Machoulas and George Hanet.

THE RIVALS: Doret (left), Willy Coppens—the umpire—and Detroyat, at Vincennes.

Then Gerd Achgelis gave one of his well-known exhibitions of "almost dangerous" flying. He would dive almost to the "deck," level off, roll over, and fly the length of the field on his back; he would zoom up again, execute a stalled turn, and repeat the performance. His machine was a Focke-Wulf "Stieglitz" biplane, equipped with a Siemens air-cooled engine of 165 h.p., with biconvex wing section specially designed for acrobatic performance. It weighed but 1,200 lb. (*550 kg*) in comparison with the 2,530 lb. (*1 150 kg*) of the Detroyat machine, and 3,200 lb. (*1 450 kg*) of the machine flown by Doret.

Finally, the event of the day—the Detroyat-Doret match. The regulations had been prepared by the Contest Committee of the Aero Club of France, in accordance with the Code of the F.A.I., and a cup of the value of 5,000 francs was presented again by *Le Petit Parisien*. Commandant Willy Coppens, Chevalier d'Houthulst, the Belgian Air Attaché stationed in Paris, was named as umpire.

The match was divided into two sections. In one of these, each contestant flew his own plane; in the other they exchanged machines. The first section was in turn divided into two parts.

During the first, for which a period of nine minutes was allowed, ten figures were required to be

THE WINNER—ONLY JUST! The Morane-Saulnier flown by Detroyat in the Aerobatics Contest.

A FAIR WINNER : Miss Liesel Bach, of Germany, who won the International Feminine Cup in her Klemm monoplane.

executed:—A spin, with three turns to the right; a spin, with three turns to the left; looping; rolls to the right and the left; half roll, followed by half loop to straighten out; slow rolls to the right and left; "renversement"—stalled turn; and, finally, an Immelman turn.

The second part allowed a period of ten minutes for each pilot to execute such figures as he desired. He was, however, required to make a list of them, and this was submitted to the umpire of the match in a sealed envelope, to be opened when the pilot "took off."

The second section of the match, in which the contestants exchanged planes, was also divided into similar parts.

Each contestant was allowed thirty minutes in which to examine his opponent's machine, and was also permitted to make one or more flights during this time.

Detroyat presented his well-known red and black high-wing Morane-Saulnier monoplane (300 h.p. Hispano-Suisa radial). This machine is similar to the type 230, but has special fuel arrangements for inverted flight. Doret piloted his all-metal Dewoitine, D.27 (500 h.p. Hispano-Suisa).

Detroyat took off first and ran through his list with expected skill, though he declared on landing that the air was very bumpy. His rival, after encircling the field in a steep bank, climbed rapidly and performed with equal skill. No one was surprised when Commandant Coppens awarded 98 points to Doret and 97 to Detroyat!

When they took their choice, Detroyat was especially brilliant in effecting half rolls followed by half loops, and he also performed several spins. Doret, on the other hand, preferred rolls and stalled turns.

Commandant Coppens awarded 98 points to Detroyat and 92 points to Doret, and the score thus stood: Detroyat, 195 points, and Doret, 190 points, at the end of the first section.

Unfortunately, during the second section, and after a brilliant show by Detroyat in a strange machine, Detroyat's machine suffered a choked fuel system with Doret, who was obliged to land it. As the regulations prohibited a second take-off, Commandant Coppens awarded the match to Detroyat on the scores already obtained.

After a demonstration by the two Belgian "power gliders," the meeting closed with the simultaneous parachute drops. Six parachutists leapt from the three Caudron "Phalenes," and returned, without mishap, to Mother Earth.

R. C. W.

THE RUNNER-UP : Doret's Dewoitine D.27 takes the field.

CREDIT WHERE CREDIT IS DUE

IN FLIGHT of April 26 the statement was made, in the article on the opening of the new clubhouse at Sywell, that the clubhouse was designed by Mr. Graham Dawbarn. Mr. Dawbarn has written to inform us that he cannot claim the credit for the Sywell buildings, and we learn from another source that the whole of the design and construction of the clubhouse, hangars, etc., as well as the advice in connection with the lay-out of the aerodrome itself, was carried out by John Brown & A. E. Henson, of 83, St. Giles' Street, Northampton. We apologise for the error, and tender our congratulations to the architects on a very fine piece of work. It may be pointed out that Mr. Henson, Col. Sir John Brown's partner in the firm, is on the committee of the Northamptonshire Flying Club.

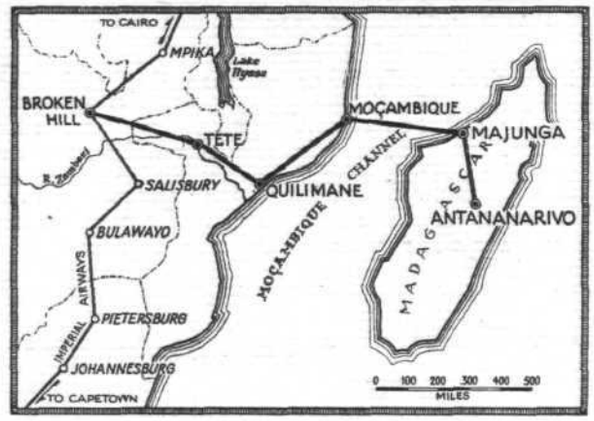
SPECIFICATIONS OF NEW AIR-FRANCE AIRCRAFT

ON April 20 several French aircraft manufacturers presented their preliminary propositions for aircraft conforming to the following specification drawn up by Air-France for a new type of aircraft to be used on their services. It is expected that any of the proposed aircraft could be completed before the end of this year. The requirements are: cruising speed 164.7 m.p.h. at 55 per cent. of total power, top speed 205 m.p.h., accommodation for 30 passengers, freight and a crew of three (two pilots and one navigator), and a range of 560 to 1,055 miles. The landing run should cover no more than 2,620 ft. after the machine has cleared an obstacle 65½ ft. high. No particular engines are specified, but the total power should be between 2,500 and 3,000 h.p.

Air Transport & Commerce.

FRENCH SERVICE TO MADAGASCAR

To connect with the Cairo—Cape Service of Imperial Airways. It should not be long before there are many more similar "feeder" lines along the Imperial Airways route in Africa, linking up various important areas in this vast continent.



A NEW French air line making postal connection with the Cairo-Cape service of Imperial Airways at Broken Hill, Northern Rhodesia, and extending to the island of Madagascar, will be put into operation about the beginning of August. Steamship connections with the new air line will be made between Madagascar and the island of Mauritius and Reunion. The negotiations recently announced in FLIGHT have resulted in an understanding between Imperial Airways and a new company with the name of "les Services Aeriens de Madagascar. It is reported that M. Lefevre will be Managing Director. At the beginning the equipment of the line will consist of some triple-engined S.P.C.A. Colonial monoplanes, loaned by the French Air Ministry to the Government of Madagascar.

When the service opens, mail and "express" matter will be carried over the route only once a week. Connections will be made with the Imperial Airways machine which leaves London every Wednesday with the mail which reaches Broken Hill the following Wednesday. On the return trip the machine from Madagascar will deliver the mail to the Imperial Airways machine which leaves Capetown each Tuesday and reaches Broken Hill on the following Thursday. It is expected that at the beginning of the operation of the line, between 115 lb. and 130 lb. of mail will be transported each trip.

The operating schedule of the new line will be as follows:—First day: Broken Hill-Tete-Quilimane (about 621 miles). Second day: Quilimane-Moçambique-Majunga-Antananarivo, the capital of Madagascar (about 994 miles). Between Moçambique, which is the last point on the African mainland, and Majunga (Madagascar) there is a flight of 250 miles over open sea.

A great saving of time will be effected. The mail between London and Paris and Madagascar at present takes 25 days; it is carried in steamships which sail once every 15 days. By the new air line it will carry mail once every week, deliveries being made in ten days. At Madagascar mail intended for the island of Mauritius and Reunion will be transferred to sea trips. Thus the delivery of the European mail to these islands will be made in about 15 days instead of 40 days, which is the time taken at present.

Madagascar is, of course, one of the most important French Colonies. It has about four million inhabitants, a large number of whom are engaged in agriculture and mining. Mauritius, a British possession with about 400,000 inhabitants, and Reunion, belonging to France, and has about 200,000 inhabitants.

The aircraft to be used on this air line are of a new type, constructed by Société Provencale de Construction Aéronautique, and known as the S.P.C.A. type 41.T. They are all-metal high-wing monoplanes fitted with three Salmson 9 N.C. nine-cylinder radial engines of 135 h.p. Wings, tail surfaces and fuselage are covered with metal sheet. The fuel tanks are in the wings. Differentially controlled wheel brakes are fitted to enable the machine to be landed in small spaces. The cabin for the pilot and navigator is just forward of the leading edge of the wings, and has the following dimensions:—Height, 4 ft. 2 in.; width, 4 ft. 3 in.; length, 6 ft. 6 in.; cubic capacity, 141 cu. ft. The machine can fly at 5,500 ft. with one engine cut out. The accompanying table gives the dimensions, weight and performance data.

R. C. W.

S.P.C.A. 41.T

Three Salmson 9 N.C. Engines

Span	65 ft. 8 in. (*20 m*)
Length	43 ft. (*13,18 m*)
Height	13 ft. 8 in. (*4,19 m*)
Wing area	598 sq. ft. (*55 m2*)
Weight empty	4,600 lb. (*2 091 kg*)
Weight of equipment	748 lb. (*340 kg*)
Weight of fuel	584 lb. (*265 kg*)
Useful load	770 lb. (*350 kg*)
Weight loaded	6,702 lb. (*3 046 kg*)
Speed at ground level	119 m.p.h. (*190 km/hr*)
Service ceiling	17,200 ft. (*5 300 m*)
Range	625 miles (*1 000 km*)

FOR THE MADAGASCAR SERVICE: The S.P.C.A. 41.T monoplane (three 135-h.p. Salmson 9 N.C. engines) to be used on the new French Madagascar-Broken Hill air line.

PLYMOUTH—LIVERPOOL BY R.A.S.

The First "Dragon" delivered for use on the Railway Air Services Ltd. Plymouth—Liverpool Route which commenced operation on Monday last.

SECOND R.A.S. STARTS : Last week the first of the D.H. "Dragons"—shown in the top illustration—was delivered to Imperial Airways on behalf of Railway Air Services for operation on the Plymouth—Liverpool route. In the lower picture Maj. Brackley, of Imperial Airways (left), is seen receiving the log-books, etc., of the machine. (FLIGHT *Photos.*)

AT Croydon, on Thursday last, Mr. Buckingham, of the de Havilland Aircraft Co., handed over a 1934 model "Dragon" (two "Gipsy Majors") to Maj. Brackley, of Imperial Airways, who took delivery on behalf of Railway Air Services, Ltd. The machine was put into service on the Plymouth-Liverpool route of R.A.S. on Monday, May 7. This service is an extension of that operated by the Great Western Railway last year.

It is probable that two or three more machines of a similar type will soon be delivered and, in July and August, some D.H.89's (two "Gipsy Sixes"). A description of this latter type, which cruises at about 140 m.p.h., was given in FLIGHT for April 26, 1934. The purchase of some D.H. 86's (four "Gipsy Sixes") is also contemplated. This type cruises at 145 m.p.h. and has a top speed of 175 m.p.h. The use of standard "Dragons" may be regarded as only a temporary measure. These machines will later be replaced by more recent de Havilland types.

Silver, red and green has been chosen by the company as the colour scheme for its aircraft. The registration letters are red and green and a stripe of the same colours, divided by a strip of silver, is painted along the sides of the fuselage. The company's insignia is carried on the nose of the fuselage and on the rudder. We have no doubt that machines coloured thus will soon be common sights at our internal airports.

The new service will operate daily, excepting Sundays. Starting from Roborough Aerodrome, Plymouth, the route is by way of Haldon Aerodrome, Cardiff Airport, Castle Bromwich Aerodrome and Speke Aerodrome, Liverpool. From Cardiff connection may be made with Bristol and Bournemouth by Western Airways, Ltd., and from Speke Aerodrome it will be possible, from June 1, to fly by K.L.M. machines to Hull and Amsterdam. Road connections have been arranged between Roborough Aerodrome and Plymouth North Road station, Speke Aerodrome and Lime Street, Liverpool; Haldon Aerodrome and Teignmouth; Cardiff Airport and Cardiff General station; and Castle Bromwich Aerodrome and Snow Hill and New Street stations, Birmingham.

Until July 28, a machine will leave Roborough Aerodrome at 8.50 a.m., reach Haldon Aerodrome at 9.10 a.m., Cardiff Airport at 9.55 a.m., Castle Bromwich Aerodrome at 11 a.m. and Speke Aerodrome at 12 o'clock. In the opposite direction a machine will leave Speke at 3.30 p.m., reach Castle Bromwich at 4.15 p.m., Cardiff at 5.20 p.m., Haldon at 6.15 p.m. and Roborough at 6.40 p.m.

From Plymouth to Birmingham the fare is 60s. single and 90s. return and to Liverpool 85s. and 120s. From Cardiff to Birmingham the fare is 30s. single and 50s. return and to Liverpool 45s. and 70s. The single and return fares from Birmingham to Liverpool are 30s. and 45s.

NEW EQUIPMENT FOR PAN-AMERICAN AIRWAYS

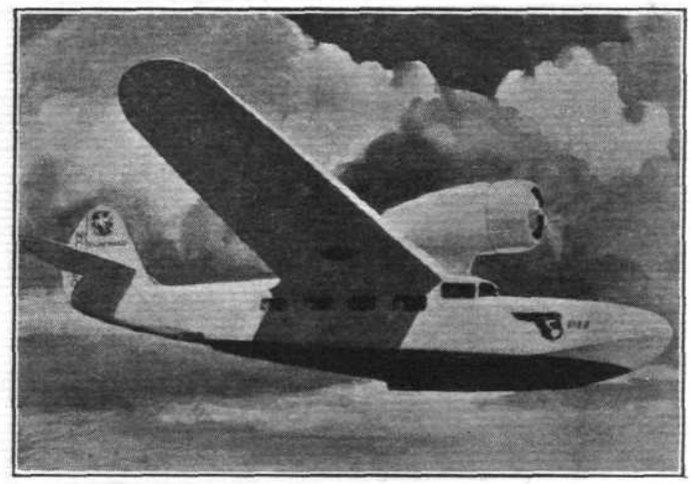
Sikorsky and Martin flying boats, Fairchild amphibians and Douglas and Lockheed land machines ordered for big "speed-up"

ABOUT £689,000 is to be spent by Pan-American Airways, in the near future, on new aircraft. The slowest of the machines ordered will have a top speed of about 180 m.p.h. Twenty-four aircraft of four different types have been selected—six Sikorsky and Martin "Transatlantic" type flying boats, six Fairchild amphibians, six Douglas D.C.2's and six Lockheed "Electras."

The largest of the new types will be the Sikorsky and Martin flying boats. A photograph of the Sikorsky was published in FLIGHT for March 1, 1933, and a drawing of the Martin was reproduced on January 19, 1932. The Sikorsky has been developed for a dual purpose. Pan-American Airways require a machine which is not only capable of making a transoceanic mail-carrying flight, but one which may be used on the present passenger and mail connections between North and South America. For the latter type of service the Sikorsky S.42 will accommodate 32 passengers. Accurate performance figures are not at present available, but it seems fairly certain that the cruising speed is about 150 m.p.h. It was reported recently that the machine, while being tested, attained a top speed of 182 m.p.h. Four Pratt & Whitney "Hornet" engines, enclosed in N.A.C.A. cowlings and driving Hamilton Standard airscrews, are fitted. The wing span is 114 ft. 2 in., the weight loaded 38,000 lb., the wing loading 28.6 lb./sq. ft. and the power loading 14 lb./h.p. During tests, at a weight of 27,500 lb., the machine took off in 8 seconds. At 30,000 lb. weight, the take off time, in a flat calm, was 15 seconds. The handling qualities are reported to be highly satisfactory.

Another particularly interesting type is the Fairchild amphibian. This is a single-engined cantilever monoplane with retractable undercarriage and retractable wing-tip floats. The wing is tapered in thickness and plan form and is of conventional two-spar all-metal construction. All exterior rivets are countersunk. Trailing edge flaps are fitted inboard of the ailerons. Large fillets are provided between the wing and the hull, which is of exceptionally clean design. The *empennage* is of all-metal construction, with the fin built as an integral part of the hull. Retraction of the landing gear into the lower surface of the wing is effected by moving the upper end of the vertical strut which carries the wheel fork and shock absorber units inward along the wing spar by means of a long screw driven by an electric motor. The tail wheel is also retractable.

Accommodation is provided for eight passengers—four in each of two compartments. Two pilots are carried. Forward of the pilot's cabin is a 50 cu. ft. space for stowing marine equipment and baggage. If desired, the passenger seats may be removed from the forward compartment, making the space available for cargo. Entrance to the passenger cabins is effected through a door on the port side to the rear of the wing. Emergency exits are provided in the forward cabin compartment and above the pilots' seats.



AMPHIBIOUS: This is a drawing of the Fairchild amphibian flying boat, one of the variety of types ordered by Pan-American Airways with a view to a big speeding up of their services.
(Courtesy of "Shell Aviation News")

A small outboard marine engine for which a collapsible bracket is mounted in the bows is provided for manœuvring the amphibian in crowded harbours and for emergency use at sea. A supercharged Pratt & Whitney "Hornet" S.3D.1 engine, developing 645 h.p. at 2,000 r.p.m. up to 3,000 ft., is fitted. This is mounted in the nose of a nacelle carried above the centre line of the hull, on a narrow streamline framework. A controllable pitch airscrew is used.

Actual performance figures are not yet available, but it is expected that the machine will have a maximum speed of 180 m.p.h. at sea level, a cruising speed, at 65 per cent. full power, of 155 m.p.h., a minimum speed, with flaps down, of 55 m.p.h., and without flaps of 65 m.p.h.

The Douglas D.C.2 landplane, which is fitted with two Wright "Cyclone" engines, and carries eighteen passengers, has a cruising speed of about 190 m.p.h., and was described in FLIGHT for March 1, 1934. We have also described (in FLIGHT for March 15, 1934) the Lockheed "Electra." This machine is fitted with two Pratt & Whitney "Wasp Junior" engines and carries ten passengers at a cruising speed of 180 m.p.h.

AIR TRANSPORT IN INDIA

A Karachi-Lahore Suggestion and a Proposed Bengal Air Service

THE original idea of starting a weekly mail service between Lahore and Karachi, linking Imperial Airways' service from England, does not appear to find favour with the Karachi Chamber of Commerce. They suggest, in a communication addressed to Indian National Airways, that a daily air-*cum*-rail service should be run between these points, adding that only a daily service could possibly develop the "air mail habit."

Their idea is to run a daily air mail service between Lahore and Khanpur, which is an important railway junction in the Punjab, and to arrange the schedule so that machines would leave Khanpur in the early morning. The mail would then be in Lahore two hours later if machines with a 140 m.p.h. cruising speed were used.

Indian National Airways, Ltd., are, it is understood, considering the extension of their daily Calcutta-Dacca service to Sylhat in Assam. The new extension would be run twice a week at first and would later develop into a regular daily service if the amount of traffic was sufficient to warrant this.

Two additional services, incidentally, are suggested for the Chittagoan route, as this is receiving excellent support.

The latest news from Cawnpore suggests that the airport may presently have a workshop of its own. The idea has been contemplated for some time, and the matter was brought to a head when the "Aurora" was detained there for almost a week. The local aero club will then be able to train ground engineers as well as pilots.

PROGRESS AT HOME AND ABROAD

AIR MAIL LEAFLET

THE spring edition of the Air Mail Leaflet, giving particulars of the air mail services available as from May 1, has now been issued. Copies will be sent to all persons or firms who have applied to be placed on the distribution list, and copies can also be obtained free of charge at any Post Office.

LONDON-STOCKHOLM SERVICE PROPOSED

CAPT. C. FLORMAN, Managing Director of A.B. Aerotransport, of Stockholm, forecast, in a paper which he gave before the Society of Swedish Engineers in London, that a direct service between Stockholm and London would be started during 1935. At first the journey will take six hours, but will subsequently be shortened to five hours. Capt. Florman prophesied that soon the air mail fee will disappear and that all letters will go by air mail. At present all air services towards Sweden pass through Holland and are operated in conjunction with K.L.M.

NEW HESTON-ISLE OF WIGHT AIR SERVICE

ON May 1, Portsmouth, Southsea & Isle of Wight Aviation, Ltd., commenced to operate a twice-daily service between Heston and the Isle of Wight. This will be increased to four services a day on May 17, 18, 19, 22 and 23, and on August 1 to 4 and 7 to 9. The single fare is 19s. 6d., exactly the same as the 1st-class railway fare, and it is believed that few who realise the existence of this economical air route will wish to make the long and fatiguing journey by land and sea. London bookings may be made at the Victoria Coach Station (where passengers are met and deposited) or through the British Air Navigation Company at Heston. At the present time the company's three-engined eight-seater Westland "Wessex" is used on the service, but it will be replaced on May 16 by eight-seater de Havilland "Dragons," equipped with Marconi wireless

NEW TESTS OF BLERIOT 5-190

Santos Dumont, the Blériot 5-190 flying boat (four Hispano-Suiza 12 Nbr engines), which was built last year for the South Atlantic service, is reported to have made some satisfactory test flights at Berre, near Marseilles. It seems safe to assume that this aircraft will shortly make a flight to South America.

A FAR EAST SERVICE

ON May 1 the Eurasia Aviation Corporation opened a new air line between Peking and Canton, via Taiyuan, Loyang (Ho-Nau-fu), Hankow and Changsha. This service will run twice a week at present, the journey occupying two days, but it is hoped to reduce this time later on. At present machines remain overnight at Loyang, where they connect up with the corporation's service between Shanghai and Chuguchak. China National Aviation Corporation, it will be remembered, also operate a service between Peking and Canton, via Shanghai. We published a review of commercial aviation in China in FLIGHT for November 2 last.

NIGHT AIR MAILS

THE night air mail service between London, Cologne, Hanover and Berlin, with its connections, provides a rapid service to most European countries. Correspondence sent by this service should be delivered, for example, in Cologne, Hanover, Berlin, Munich, Brussels, Copenhagen, Stockholm and Bâle the following morning, and in Vienna, Prague, Danzig, Tallinn, Helsingfors, Budapest, Venice, Kaunas and Belgrade the day after despatch. Air mail letters for this service may be posted in the ordinary street boxes in London in time for the 5.30 p.m. collections in the head-district areas or the collections made about 4 p.m. in the sub-district areas; they may also be posted up to 8 p.m. in the special blue air mail box at the General Post Office, King Edward Building, E.C.1, and about an hour earlier in the special blue air mail boxes in the London head district areas. For the latest times of posting elsewhere inquiry should be made at the local head or branch office.

INCREASING AIR TRAVEL IN EGYPT

IT is gratifying to report the ever-increasing numbers travelling by air in Egypt. During March, Misr Airwork aircraft flew a total number of 36,117 miles on all services and charter, carrying 1,233 passengers. Among those travelling on the regular services during one week were Allouba Bey, Director of the Misr Navigation Company, who was accompanied by Miss Allouba, Mr., Mrs. and Miss Lessenya, Mr. Carver, Mrs. and Miss Stroschminder, Count and Countess Shedid, Maj. Samson and El Mallawani Effendi on the Alexandria service, and the Right Reverend Bishop Gwynne on the Palestine service.

SCANDINAVIAN AIR SERVICES

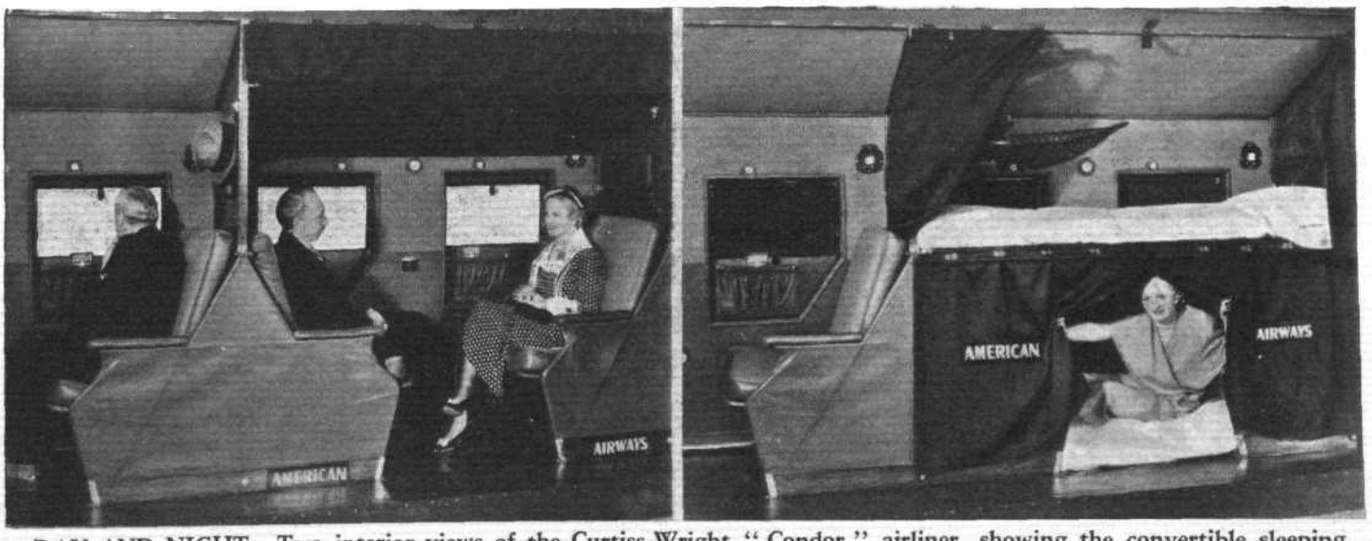
WITH the inauguration of summer time-tables, a considerable improvement will be made in Scandinavian air services. The Oslo-Berlin route, via Copenhagen, will be covered in five hours, and the Copenhagen-Hamburg service will be run twice daily. Three trips daily will be made on the Copenhagen-Paris and the Copenhagen-London services, and an express service will be started between Copenhagen and Goteborg. The new Northrop "Deltas" recently ordered by A.B. Aero Transport will be used on this route and will make the trip in one hour. The Amsterdam-Hull and Liverpool connection will be inaugurated on June 1.

PAN-AMERICAN IN BRAZIL

A TWICE-WEEKLY air service has been inaugurated by Pan-American Airways between Belem (Para) and Rio de Janeiro, Brazil. The single fare for the 2,500-mile journey, which is accomplished in 2½ days, is £45.

BOLIVIAN AIR TRAFFIC

LLOYD AÉREO BOLIVIANO, of Cochabamba, gives the following traffic statistics for February, 1934:—215 flights, 21,200 miles flown and 1,189 passengers and 530,000 lb. of mail and express carried.



DAY AND NIGHT: Two interior views of the Curtiss-Wright "Condor" airliner, showing the convertible sleeping berth arrangement, which forms a feature of the new fleet of machines to be put into operation by American Airways between Dallas and Los Angeles.

Airisms from the Four Winds.

Viceroy to fly to Europe

The Earl and Countess of Willingdon will leave New Delhi by Imperial Airways on May 15.

A "Bomb" Day

Instead of flags, small model bombs will be sold in Saxony on the Reich Air Protection League Day.

In America

Tenders for eighty bombing and thirty fighting aeroplanes are to be called for by the U.S. War Department.

Rules from Turkey

If a draft law is passed in Turkey, all aircraft will be made to fly at a height of between 2,400 and 7,500 ft., and foreign machines will be liable to fire from anti-aircraft batteries if they pass over forbidden zones. Foreign companies operating civil air lines in Turkey will be forced to employ Turkish pilots, and all contracts between pilots and companies will be ratified by the Ministry of National Defence.

Fokker Speaks

Mr. Anthony Fokker was a passenger in the first Imperial Airways machine, an H.P.42, from Paris on Monday, April 30. He was very impressed by the comfort afforded, and especially with its comparative silence. Before returning to Paris on the following Thursday, he inspected one of our latest air liners, and, while quite ready to believe that the machine was very silent, comfortable and steady, it did not appear to be his idea of an "efficient" design. The Fokker F.XX, *Zilvermeeuw*, was on the apron at the time of our conversation. This machine, said Mr. Fokker, is now running well, and is making good time on the Berlin service, though it still has "too many bits sticking out." He appeared to be very enthusiastic about the Douglas D.C.2, and a machine of this type should be in European service at the beginning of August.

UNBALANCED FORCES? A Junkers Ju. 52/3 m. with two Townend rings and one N.A.C.A. cowling on the port side. This type is used for the night service to Berlin.

What is a Record?

After ruling out land machines and male pilots, the effort of the Marchesa Carina Negrove di Campiaso in reaching a height of 16,800 ft. in a Breda 15 seaplane can be considered a record.

"Endeavour" Held Up

Although Mr. T. O. M. Sopwith's America Cup challenger was to have got under way last Sunday, a strong westerly wind prevented the crew from setting the mainsail and she remained in Portsmouth Harbour. There will be a week of sail-stretching and testing before *Endeavour* shows her speed.

Mr. and Mrs. Anthony Fokker on the tarmac at Croydon.

To Austria at Whitsun

The Austrian Aero Club has notified the Royal Aero Club that British private owners who cannot take part in the complete tour between May 19 and 27, may join the tour at any point and will be charged a proportionate sum. The cost of the whole nine-day tour is 300 (Austrian) schillings.

Bulldogs for Finland—

It is reported that a large number of the latest Bulldog "Mercury" fighters have been ordered for the Finnish Air Force.

—and Seagulls for Australia

An order, too, for twenty-four "Seagull V" amphibians has been placed by the Commonwealth Ministry of Defence with the Vickers Supermarine Aviation Works.

Lepidopterous

"On April 23 a female 'Puss Moth' emerged from a previously unidentified cocoon . . . in the Outer Hebrides," says a correspondent to *The Times*. We knew that the de Havilland Company were building another factory at Hatfield, but——!

Notice to Private Owners

The Royal Aero Club is preparing a list of Private Owners who may wish to receive particulars of Air Rallies and of invitations from European countries, special information on air touring, and regulations governing all air contests. Owners who wish to be put on the mailing list are asked to send a postcard to the Royal Aero Club, at 119, Piccadilly, London, W.1, giving name, address, and registration mark of aircraft.

Rocketry

A German rocket expert, Herr Gerhard Zucker, is exhibiting a large example, intended for the transmission of mails, at the Air-Post Exhibition in the Horticultural Hall. It is understood that the exhibition authorities are arranging with the British Interplanetary Society of Wallasey to try out this mail-rocket somewhere in England. A launching rack determines its direction and trajectory—but rockets are such temperamental things! The Postmaster-General may be expected to think twice before he allows his valuable mail to be sent along with a travelling explosion. But everything must pass through an experimental stage.

New Airway Traffic Rules

A new Notice to Airmen (No. 33 of 1934) has been issued, setting forth the revised provisions governing the traffic rules for the London-Continent Airway, and previous notices concerning this matter are now cancelled.

Japan's Aircraft Material

Japan has hitherto been dependent on America for her supplies of bauxite, the earth from which aluminium is obtained. It is reported now that a Japanese company in Formosa has made an agreement with the Nibam Company to collect 24,000 tons of bauxite a year from deposits on the island of Bintang in the Dutch East Indies.

The King's Cup—

Two definite entries have so far been received for the King's Cup Air Race, which will be flown on July 13 and 14. These consist of a "Gipsy Major Swift" entered by Mr. A. H. Cook and a "Gipsy Three Moth" by Mr. L. Lipton. It is understood that Air Vice-Marshal A. E. Borton, managing director of D. Napier & Son, Ltd., may pilot an Airspeed "Courier" fitted with one of the new H-type "Rapier" engines. Entries close at 5 p.m. on May 18, though late entries at double fee will be received before May 30 at the Royal Aero Club.

—and the MacRobertson Race

Up to the time of going to press there are still only four definite entries for the England-Australia Race in October. These are from the Aircraft Exchange and Mart, Ltd. ("Courier" to be flown by A. L. T. Naish), Mr. A. O. Edwards (D.H. "Comet" to be piloted by T. Campbell Black and T. W. A. Scott), Hospitals Trust, Ltd. (unnamed machine, probably American, to be flown by Col. J. C. Fitzmaurice), and from Mr. T. Neville Stack (Airspeed "A.S.8" with Stack and S. L. Turner at the controls). But both Sir Charles Kingsford-Smith and Messrs. Waller and Rubin are almost certain starters. Entries close at noon on June 1.

Defence Manœuvres in France

Aerial forces will play a considerable part in the naval manœuvres designed to test the west coast defences of France. The problem of protecting communications will be especially studied in the operations from Brest.

Living up to its Name

After being lost in thick fog, the pilot of a Percival "Gull" decided to put down in the Channel beside a fishing vessel, which later towed the machine into Dieppe. Neither the pilot nor his passenger was hurt.

AN AUTOGIRO FOR INDIA: Raj Kumar Shri Ghanshyamsinhji of Limdi, who is at present taking his British "A" pilot's licence on the Autogiro at Hanworth. He has placed an order for a C.30-type Autogiro, which he intends taking back with him to India, where he already holds the Indian "A" licence.

Air Day in Moscow—

No fewer than 528 war machines flew over Lenin's tomb on May Day. Among them was the new six-engined bomber, sister machine to the *Maxim-Gorky* of propaganda fame.

—and May Day in France

Aeroplanes flew over Paris on the same day, but were used for studying any dangerous movements during unexpectedly quiet demonstrations.

Air Survey in Labrador

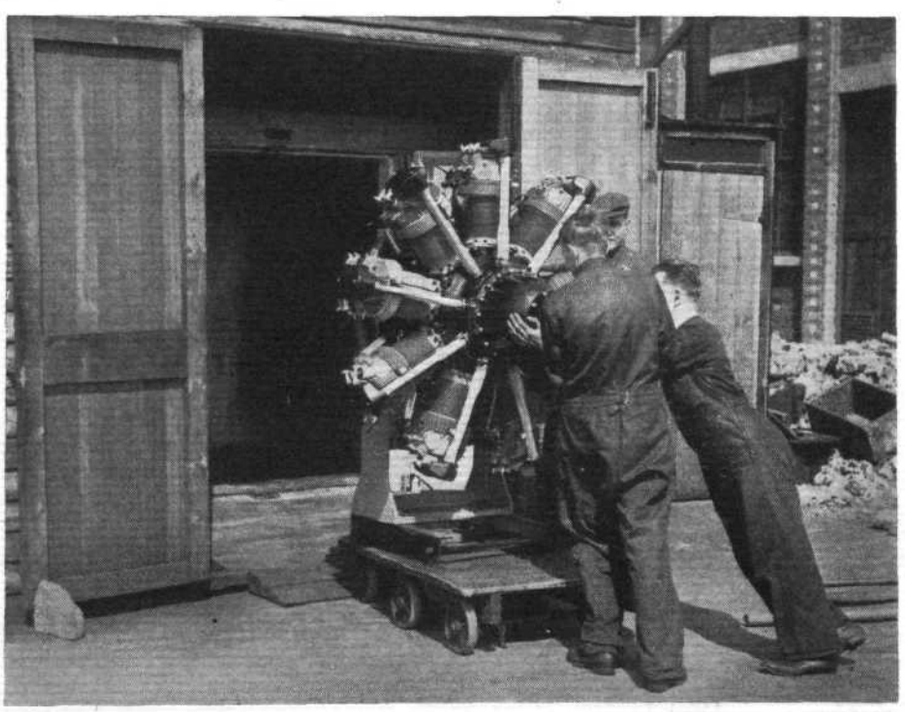
In the course of a letter to *The Times*, Sir Wilfred Grenfell suggests that the use of aeroplanes will be essential if the work of surveying the Labrador seaboard is not to be hampered.

An Unofficial Record

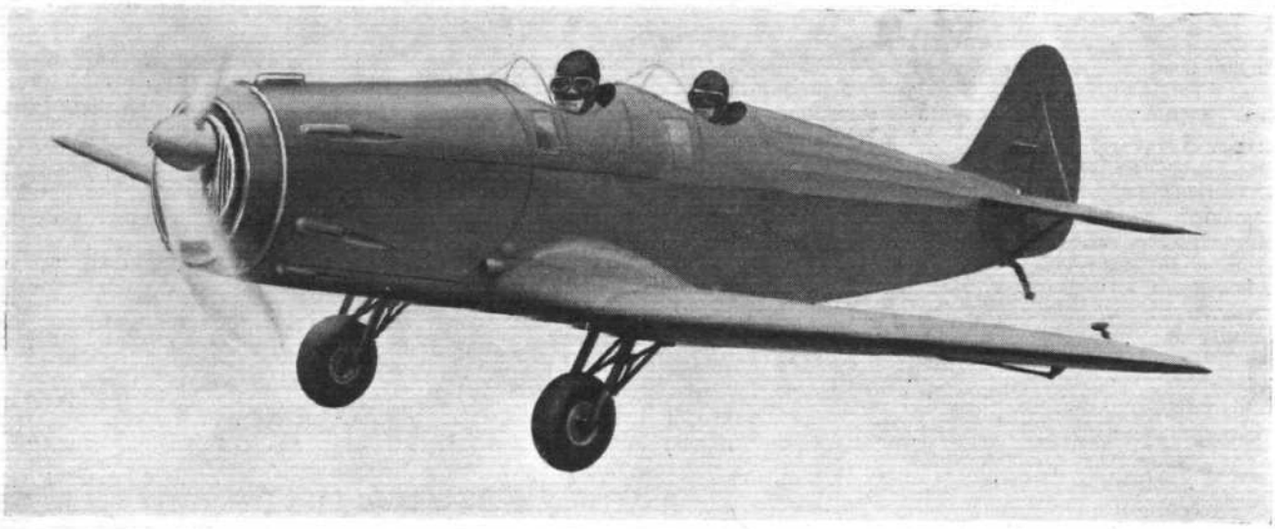
Without the slightest warning Messrs. K. Waller and B. Rubin crept over the coast on May 1 in thick weather and landed their "Leopard Moth" at Folkestone after leaving Fort Darwin 8 days and 12 hours before. Unfortunately, their flight, which was in the nature of a survey preparatory to the MacRobertson Race, was not officially timed, though they have beaten Mollison's record by some nine hours. These two stalwarts have, however, beaten another and equally worthy record—they have made an astoundingly good flight without the almost inevitable fanfare of press trumpets.

Per Ardua ad Lunam

While lecturing at Nancy, Professor Auguste Piccard expressed a hope that mankind would learn to look back upon his ascent into the stratosphere as the first tentative step on the way to regular travel in interstellar space. The professor is of the opinion that such journeys will not be made by rocket, or in a shell, but by utilising light energy. The "shell" suggested, for instance, by Jules Verne, would have required an initial speed of two miles a second, for which twenty tons of explosive would have been needed. How, Professor Piccard wondered, was it to land on the moon, or return from it? He went on to explain that 120 lb. of lead would be fuel enough to take a man to Mercury and back.



"STRAIGHT OFF THE ICE": The Bristol Aeroplane Company, Limited, use a low-temperature test chamber for discovering the effects of running an engine in winter conditions such as may be met with in Canada. (FLIGHT *Photo.*)



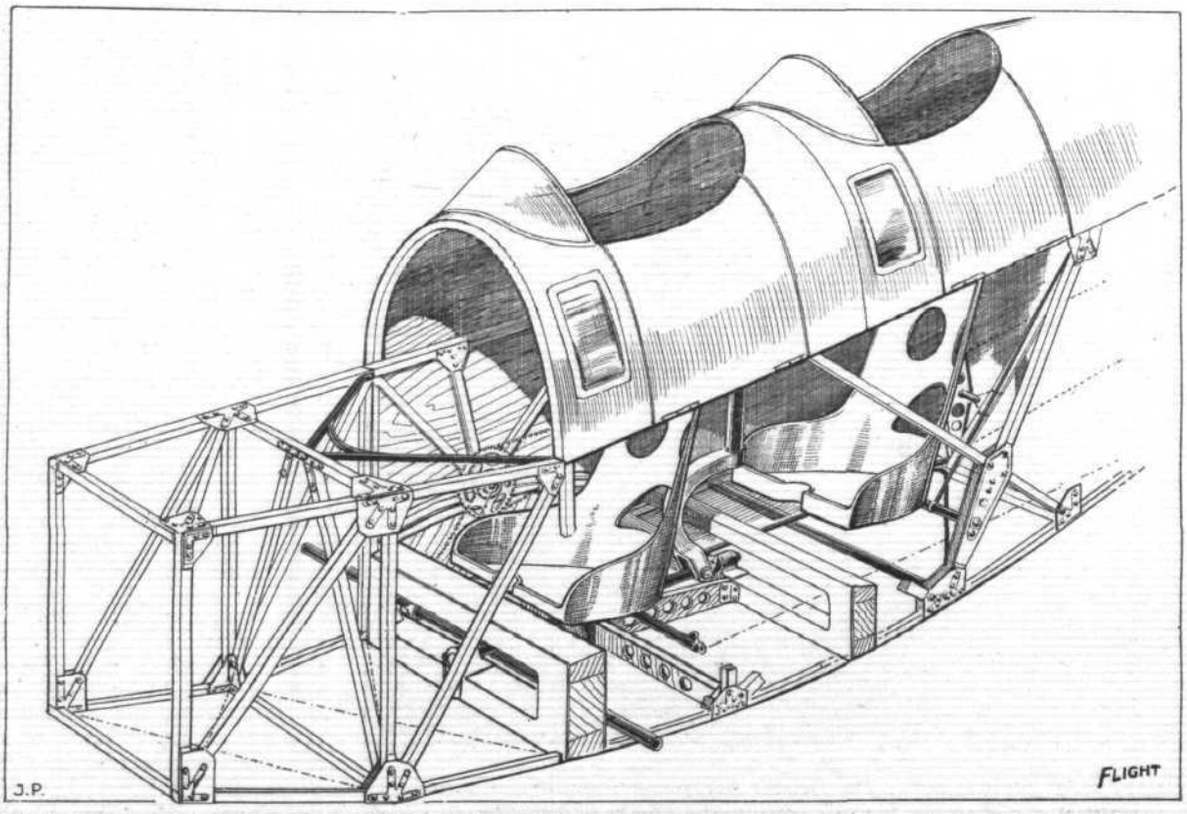
A COMPOSITE PICTURE : Showing how the " Kite " will look when flying. (FLIGHT *Copyright.*)

A NEW SPORTS MODEL

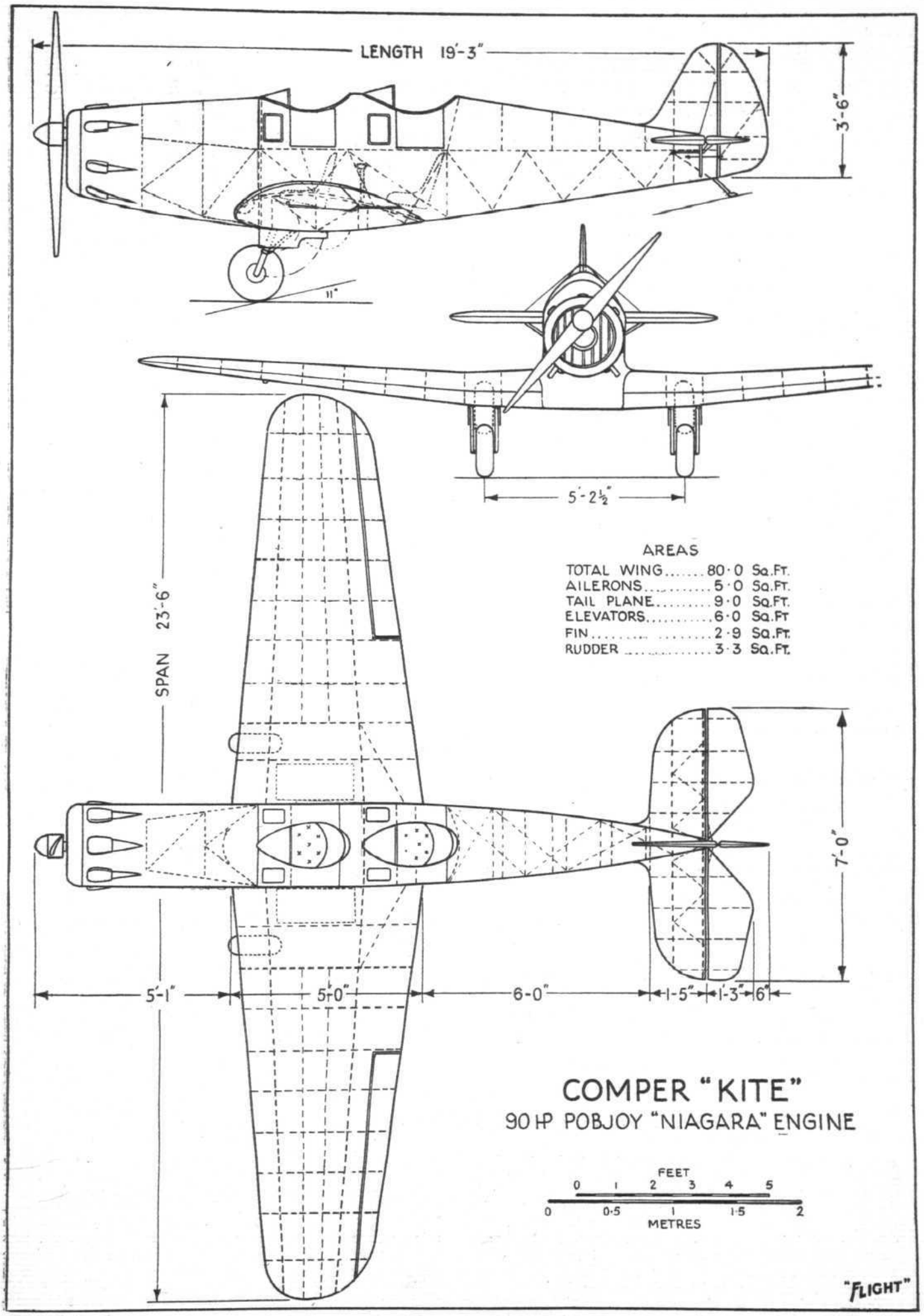
The Comper " Kite " is a two-seater version of the Comper " Streak," but is being produced in response to numerous requests for a two-seater " Swift "

RARELY if ever in the history of flying has the secret of a new aircraft type been so closely guarded as that recently maintained by the Comper Aircraft Co., Ltd., of Heston. Usually, some sort of rumour leaks out, and quite a number of people know when an aircraft firm is about to bring out a new model. In the case of the Comper " Kite," the announcement has come as a complete surprise, and the " Streak " with which Flt. Lt. Comper will challenge the French constructors for the Coupe Deutsch was generally looked upon as the latest Comper type. Hot on its heels now follows the " Kite," which is in effect a two-seater version of the " Streak." The manner in which the firm came to decide on the production of the " Kite " is interesting and deserves to become known.

Although a fairly large number of Comper " Swifts " were built and sold, it gradually became evident that no single-seater, no matter how appealing in its flying characteristics, would ever command a very large sale—certainly not one running into hundreds. One has often heard it stated that the " Swift " was an extremely nice little machine, but the admission was usually accompanied by the wish that Comper would produce a two-seater " Swift." If one thinks of the general lay-out of the " Swift," it at once becomes obvious that to turn it into a two-seater would be almost impossible. The high-wing arrangement, with the fuselage " hump " supporting the centre of the wing, precluded any sort of arrangement in which the passenger could get a reasonable view and fairly easy access to his cockpit. From a weight-carrying point of view, the " Swift " would have carried the equivalent of another person easily, even remaining in the " Acrobatic " category while doing it. But space was the difficulty.



NEW SEATING ARRANGEMENT : The additional bay to carry the new engine mounting for the Pobjoy " Niagara " is also shown.



THE COMPER " KITE " : General Arrangement Drawings. These should be compared with the G.A. drawings of the " Streak," published in " Flight " of April 19.

Then Mr. Comper produced the "Streak" as an out-and-out racing type. With the exception of the initial wing flutter, which came as a complete surprise in view of the great stiffness of the wing, and which has since been completely cured by fitting ailerons of narrow chord and provided with mass-balances, the "Streak" proved to have quite remarkably good flying qualities. Not only is the speed excellent for the power of the engine fitted, but the controllability and manœuvrability are far better than would be expected in a racing type, while the take-off and landing resemble those of an ordinary touring machine.

A Good "Kite"

With the demand for a two-seater "Swift" in mind, and with the high performance and general handiness of the "Streak" an established fact, the decision to introduce the "Kite" was a logical one. The more difficult type, the racer, had already been found to have good qualities. The low-wing arrangement lent itself very readily to the addition of a second seat. The chain of argument was complete. The only point to be settled was the choice of engine. Because of its low specific weight, and with very good service of the "R" type in many "Swifts" in mind, the choice fell on the new Pobjoy "Niagara" of 90 h.p. The "R" engine, it will be recalled, was fitted in "Swifts" which made some famous long-distance flights, such as England-Australia, England-Cape Town, Madrid-Manila, and twice over the Andes mountains. The Comper company is so satisfied with the running of the "Niagara" that it expects equally good results from it in the "Kite."

Having followed the logical steps which led to the introduction of the Comper "Kite," we may devote a little attention to the features which promise to make it a very popular type as soon as it is on the market. High performance is the first notable characteristic. The performance figures are, of course, at present the calculated figures, but in the past Flt. Lt. Comper has not been very far "out" in his estimates, and the fact that the machine so nearly resembles the "Streak" should be a further reason for close prediction. With a maximum speed of 155 m.p.h. (250 km/h), it is estimated that the cruising speed will be about 140 m.p.h. (225 km/h). That the "Kite" will be a useful as well as fast sports type is indicated by the fact that with full load of pilot, passenger and luggage, the range at cruising speed is calculated to be some 700 miles. This range should be ample for the requirements of most owners, and will allow of quite long flights against strong head winds. With a tare weight of 670 lb. (304 kg.) the gross weight will be approximately 1,200 lb. (544 kg.), so that the ratio of gross to tare weight is 1.76, the machine carrying 76 per cent. of its own weight as disposable load.

In general construction the "Kite" will be identical with the "Streak" described and illustrated in FLIGHT of April 19, 1934. The only exception will be the nose portion of the fuselage, which will be extended to take the Pobjoy "Niagara" engine. The passenger will sit approximately over the centre of pressure, so that the trim will not be affected.

Our general arrangement drawings show the lines of the "Kite," and also the main areas. An impression of how the machine will look when flying is given on page 462. No illustrations and no figures can give a real impression of how the machine will handle, but the behaviour of the "Streak" promises well for the new sports type, the first appearance of which will be awaited with interest.

EVERYBODY'S AIR DAY

On Empire Day, May 24th, R.A.F. Stations, Civil Aerodromes, and several Aircraft Works will be open to the public

AFTER months of hard work, the Air League's plans to make Empire Day an "Air Day" are maturing. The fullest support has been promised by the Air Ministry, by the flying clubs and schools, and by air transport concerns, so that, even if there are no further developments, the general public should have a perfect opportunity either to slake a thirst for information, or to spend a very enjoyable day.

Guides will be appointed to take parties on tours of inspection at all R.A.F. stations other than those directly concerned with experimental or secret work, and the public will have an opportunity of watching the day's training. Although no special "shows" are being given, it is tolerably certain that each station will endeavour to concentrate as much normal work as possible into that one day. Included in the list are several seaplane stations.

Special joyriding facilities are provided at most civil aerodromes, and at some the charges are being reduced to an absolute minimum so that everyone may have an opportunity of discovering that flying is not at all a terrifying business. At Blackpool, for instance, the charges are to be as low as 1s. 6d. and 2s. 6d. for children and grown-ups, respectively, and at Brooklands there will be a limited number of "lucky" free flights. At both Bekesbourne, Kent, and Hanworth there will be Autogiro flights.

Among the schools, Air Service Training, Ltd., will arrange for stewards to show parties how everything is done from ground to air, and tea will be provided in the mess. People in the Leicester district will have an opportunity of seeing the perfect private airport in Mr. Lindsay Everard's Ratcliffe aerodrome. Modern gliders and sailplanes will be demonstrated at the Dunstable site of the London Gliding Club.

All the municipal airports, as well as Croydon and Heston, will be open as usual and special facilities given. In spite of the difficulties involved, several manufacturers are to arrange for public inspection, including Airspeed, Ltd., at Portsmouth and General Aircraft, Ltd., of Monospar fame, at Croydon, which will be open on May 24, and Sir W. G. Armstrong-Whitworth, Ltd., at Coventry, Saunders-Roe, Ltd., at Cowes, and Rolls-Royce, Ltd., at Derby, on the Saturday following.

It will be seen that the general public is to have an opportunity that rarely offers itself, and when the arrangements are completed there should be "air interest" in every possible district.

APEX

Lord Londonderry opens the International Air Post Exhibition

ON Monday last the Secretary of State for Air, Lord Londonderry, opened the International Air Post Exhibition at the Horticultural Hall. This is, as Lord Londonderry mentioned in his opening speech, the first exhibition of its kind seen in this country. It is the third international air post exhibition held, and Lord Londonderry congratulated the Chairman, Brig.-Gen. R. Ridgway, President of the Aero-Philatelic Club, and the Council, on their decision to arrange it in London. After performing the opening ceremony, Lord Londonderry released a carrier pigeon which carried good wishes to the Postmaster-General. The bird reached its loft in Doughty Street some hours later. In speaking of the history of the transport of air mails, Lord Londonderry mentioned such services as that between London and Paris in 1919, the Cairo-Baghdad service operated by the R.A.F. in 1921, and that service through Africa and India to Singapore. He recalled that the first mail-carrying service operated in this country, and, so far as he was aware in Europe, was that between Hendon and Windsor at the time of the Coronation of King George in 1911.

The Exhibition, which remains open until May 12, contains over a million stamps. One of the most interesting exhibits is a collection, formed by Mr. W. L. Everard, M.P., of stamps illustrating various types of aircraft, accompanied by drawings of the actual machines.

Airport News.

DONCASTER AIRPORT

Inter-club navigation test and race, and flying display to follow official opening by the Earl of Lonsdale

ON Saturday, May 26, the Doncaster Airport will be officially opened by the Earl of Lonsdale, K.G., G.C.V.O. The inaugural ceremony will be followed by a navigation test and air race, which will be flown over a 150-mile course, and a flying display organised by Sir Alan Cobham. The technical arrangements for the race are in the hands of Com. Perrin, of the Royal Aero Club, and Sir Alan Cobham, who acted as consultant to the Doncaster Corporation in the acquisition and development of the airport. The aerodrome is adjacent to, and on the south side of, the racecourse. At present the total acreage is 120 acres, but the Corporation has the power to increase this to 420 acres and to spend £100,000 on development.

As the result of consultations with various flying clubs, the Doncaster Corporation and Sir Alan Cobham decided that a navigation test combined with a race would be more popular than a straightforward race, which might keep out several possible private owners who do not like to race their engines for a prolonged period. The official handicappers will be Mr. Dancy and Mr. Rowarth.

Owing to the nature of the test it is impossible to disclose the course, but the start and finish will be at the new airport. As the first prize the Doncaster Corporation is presenting a cup of great historical and monetary value. It was originally intended as a prize for an air race in 1910 which was abandoned. To supplement this there will be a substantial cash prize. Sir Alan Cobham is arranging for cash prizes to be awarded to competitors who are placed second, third and fourth.

A pilot must fly either his own aircraft or, if he is a member of a club, he may hire one of the club aircraft. The race is not open to instructors or professionals. There is no entrance fee.

The test will be held in the following way. Before taking off, each competitor will be handed a sealed envelope which will give him instructions to fly on a given compass course for a certain number of miles until he observes ground markings near some specified landmark. These ground markings will give him a second course and the distance to a second place, where he will find further ground markings and a permanent landmark. After reaching the second point, which will be about 40 miles from Doncaster, the competitor will race home to the airport. Secret checks will be placed along the entire course.

Each club is to enter a team of not less than three machines, and the winning team will be that which has the lowest aggregate of place numbers. In the event of a machine not finishing the course, it will be allocated a place position one above the total number of starters.

CROYDON

IT is usually the small things which impress. Quite recently an exporter of pedigree dogs was much more convinced of the efficiency of the air service by the fact of obtaining the "returned empty" dog box back by 3.15 p.m. than by the fact that the dog, which left Croydon at 9 a.m., was in its new owner's hands at Rotterdam by 10.55 a.m. Similarly, though the new Air-France London-Rome in a day service which opened last Wednesday marks a milestone in air travel, I was more impressed by the little story of flowers plucked in Rome in the morning adorning a London dinner table in the evening than by all the rest put together. The rest, by the way, was not uninteresting. Dr. Hanfstaengl, German Press Bureau Chief, who had an appointment the same evening in Rome to see a German film translated into Italian, took the new French service and kept his appointment—but it is those fresh flowers that bring the advantages of the service most vividly home to me.

Early last week a "Gipsy VI Dragon," *Rapide*, was delivered to Railway Air Services, Ltd., at Croydon and tested by Maj. Brackley before being flown by an Imperial Airways first officer to the north of England. It is destined for the Plymouth, Cardiff, Birmingham route. It seems that even railway directors are human, and when the question of colour scheme for R.A.S. aircraft came up for discussion, four very definite and well-known locomotive colour schemes were probably advanced with very great finality. The tactful suggestion—did it come from the tactful Imperial Airways director of the new company, I wonder?—that green and red, the universal signalling colour scheme, should be adopted, led to the first R.A.S. aeroplane arriving at Croydon with a green and a red line on a silver background.

The Croydon-Cowes service which came into operation last Tuesday is doing very well, I hear. Two pilots who are operating this service are well known. Messrs. Lynch-Blosse and Duddington, the former as a long-distance charter pilot and the latter in the flying school world.

Provincial Airways, Ltd., report a total mileage flown to date of 5,240 miles, including special charters to Hull and Blackpool. During last week some 40 passengers were carried. The Blackpool charter was an important one. The passengers were delegates of the Incorporated Sales Managers' Association going to their annual conference. Mr. Noel Brown, a director of Provincial Airways, Ltd., recently gave an interesting address to members of the Croydon Rotary Club, in which he mentioned most of the air lines operating in and out of Croydon.

There is every excuse for very young men with their first new motor-bike boasting of their prowess to a wondering maiden in spring. There is less excuse for "shooting a line" in the same season about flying, to a journalist. On Monday I opened a newspaper, to be confronted by headlines, "Pilots who scorned a gale—though air liners were held up." The article went on to describe the thrills—and bumps—of flying small aeroplanes in a 45 m.p.h. wind. Several people arrived from France on Sunday last at Hatfield, and two of them, it was stated in the newspaper, came with the news that, although all air liners were held up, *they* had flown on. They were described as saying "What a trip! It was really rough." All this would not matter a bit except that it is bad for the commercial aviation business. In all the years I have been connected with the business I have never heard of wind alone, however strong, holding up the regular air services. Puzzled as to why a mere 45-50 m.p.h. wind should hold up all air liners on Sunday, May 6, I made certain inquiries. From official records, I am able to show that not one of the scheduled services in or out of Croydon was interfered with by the "gale." One very experienced pilot of the air lines chuckled when I showed him the article. "If you fly low in a spot of wind like we had on Sunday," he remarked, "you will find all the bumps there are. You want to know what height to fly at in various types of weather. I came back from Paris at 3,000 ft. on Sunday, and it was as smooth travelling as anyone could hope for. Not a bump in the sky."

What I often wonder is, why news editors seldom spare a couple of coppers for a 'phone call to this airport to verify a story. It makes people doubt the accuracy of the rest of the news when they see articles of the sort I have described about their own particular business.

A comic interlude last Tuesday was when a private owner, taxying about the aerodrome here, failed to observe a clearly indicated obstruction and descended suddenly into a manhole where an electrician was pursuing his lawful occupation. The electrician, according to my informant, was very scared and the pilot very annoyed. The pilot's right to be highly indignant with the electrician I should query, if it were an air line pilot who had thus ignored the regulations.

A. VIATOR.

STAVERTON AERODROME

Cheltenham and Gloucester at last have a Joint Airport

NEGOTIATIONS which have been in progress over a long period between the Corporations of Gloucester and Cheltenham for the provision of a joint airport to serve the two towns have reached a successful conclusion. The site selected is at Staverton, midway between the towns, about four miles from each, having a considerable frontage to the main trunk road between London and South Wales (A.40). The Corporations have acquired 180 acres of land, including the site containing about 84 acres provisionally approved by the Air Ministry for an "all-types" licence, and they propose to clear, drain, grade, sow and roll the site, and provide an access road of light construction, and also the Circle and Names.

The Corporations propose to lease the 180 acres of land to an operating company with a view to the development of the approved site as an aerodrome, and to reserve the right to take any part of the land fronting the main road (which does not form part of the approved site) out of the lease, if required for commercial or manufacturing purposes in connection with the aerodrome.

It is anticipated that the rents that might reasonably be anticipated by the lessees from agricultural and accommodation tenants and sub-tenants would amount to about £125 per annum. The Corporations do not propose to provide any buildings, which will be a matter for the lessees, and will have an important bearing on the term of the lease. The Staverton Aerodrome will certainly be one of the key positions in the airport system of this country. It already lies conveniently on the air routes from the North and Midlands to the South-West and South Wales, and from London to South Wales.

HESTON

HERR HAFFNER, the Austrian inventor, who some months ago carried out trials at Heston with an experimental aircraft working on the helicopter principle, has since been engaged upon further research and experimental work at Heston Airport. Recent vibration tests upon a non-flying modification of his first machine have been very successful, and Airwork, Ltd., is now to be entrusted with the construction of a new flying "Revoplane" embodying the results of a year's calculations and experiments. Airwork, as is well known, have carried out a great deal of service work upon Autogiro machines, in addition to the construction of the first C.30 P wingless model, and at the present time two of the older type are in the shops in process of rebuilding.

Mr. Bernard Rubin landed at Heston on May 2 in the "Leopard Moth" which he purchased from Brian Lewis & Co., and in which he achieved a rapid flight to Australia and back with Mr. Waller. Mr. Rubin learned to fly at Heston as recently as last August, using "Moths" and "Cadets" alternately for his instruction. His first solo was made on a "Moth" after only three hours' dual instruction.

Mr. Niall Rankin and his wife, Lady Jean Rankin, who learned to fly at Heston in keen competition and made their first solos within a quarter of an hour of one another after exactly six hours' dual instruction each, have now bought their first aeroplane, a D.H. "Leopard Moth."

The owner-driver hire business formerly carried on at Heston by Wrightson & Pearse, the air-taxi and airline operators, has been taken over by an independent company to be known as Wrightson Air Hire, Ltd. The parent firm, relieved of this portion of their activities, are now able to devote themselves more fully to their charter and airline operations and to the aircraft brokerage service in which they act as intermediaries between the buyers and sellers of second-hand aeroplanes.

DEVELOPMENTS ELSEWHERE

BARTON

THE Manchester Corporation Airport at Barton will not be developed in sufficient time to enable fast commercial machines to use it this year.

BRISTOL

EXTENSIONS to the aerodrome buildings at Bristol Airport have now been completed. The new premises comprise a pilots' room and passengers' waiting room, and an enlargement of the existing kitchen accommodation.

CORK

AT a recent meeting of the Cork County Council it was mentioned in a report by the County Surveyor that the principal object in view in setting up Cork airport is to secure a control over the pick of the transatlantic traffic passing by the Irish coast. Although control over shipping lines using Irish ports had been lost, there was now an opportunity of gaining full control of airways. The existing mail service of the United States Lines calling at Cork Harbour might be used as the thin edge of the wedge.

DUMFRIES

ON May 1 Sir Alan Cobham visited Dumfries and addressed the public on the question of the provision of an aerodrome for the town. About five years ago Sir Alan said that Dumfries was very conveniently situated from the point of view of providing an airport. It is felt that with the start of the Glasgow-Liverpool air service, which passes over Dumfries, something may be done in the near future.

STOKE-ON-TRENT

STOKE-ON-TRENT City Council has unanimously approved a resolution that the Corporation should take immediate steps to bring the aerodrome at Meir, Stoke-on-Trent, which is the property of the Corporation, under Municipal control. The Town Clerk reported that National Flying Services, Ltd., had agreed to surrender their lease for the sum of £150 and that the Aerodrome Sub-Committee had accepted the offer.

SHEFFIELD AERODROME

AN aerodrome has been established at Coal Aston, three miles south of the centre of Sheffield. It is not yet licensed, but permission to land may be obtained from Mr. E. Partington, Town Hall, Sheffield (Telephone 20061), or at Cavendish Avenue, Dore, Sheffield (Telephone 70836), after 5 p.m. There is a garage, inn, taxi and telephone a quarter of a mile away at the Norton cross-roads, on the Sheffield-Chesterfield road.

LEICESTER MUNICIPAL AIRPORT

THE new Municipal airport which is being built for Leicester at Braunstone is nearing completion, and it is planned to have it ready for use for the official opening on July 7. En-tout-cas, Ltd., have had to do an enormous amount of work to get this site fit for use as a landing ground, but when they have done so it should be admirable in every respect. During a recent visit we saw something of the careful manner in which the ground is being prepared. The following figures give some idea of the work entailed in preparing an aerodrome of this nature. Two hundred large trees had to be uprooted and removed; two miles of a high hedge removed; five large, deep ponds drained and properly filled in; 73 miles of mole and other drains put in; 60,000 tons of material had to be removed during levelling operations, in the course of which some 400 large boulders, weighing between five and six tons each, were encountered and had to be removed, and, finally, a complete sewage disposal plant and drainage system has been put in for the clubhouse. Apart from work in this connection there has, of course, been a great deal of fencing to be put up and approach roads to the clubhouse itself to build.

RESEARCH

Annual Report of the National Physical Laboratory

ESTABLISHED in 1900, the National Physical Laboratory at Teddington has expanded to an extent which probably few people realise. There are 14 large buildings in grounds totalling some 50 acres, and the staff employed on research of all sorts exceeds 600.

From the Annual Report for 1933, issued by H.M. Stationery Office this week, price 13s. net, it is evident that work was carried on last year which will be of the greatest importance to science and industry in all their branches. The particular sphere in which FLIGHT readers may be expected to be interested, that relating to flying and all the other related sciences, is not dealt with as fully as in the special reports issued by the Aeronautical Research Committee, this being a general report on the work of the whole of the N.P.L., but a good deal can be gleaned from a perusal of the report.

New Wind Tunnels

A new tunnel with a wind speed of 140 miles per hour was constructed and put into use in 1933, and a second, similar tunnel is under construction. These new tunnels are of the modern open-jet type, *i.e.*, the central, working section is not enclosed, but an object can be thrust from the surrounding still air into the centre of the wind-stream. The jet of high-velocity air is about 8 ft. across and an expenditure of energy at the rate of 400 horse-power is necessary to maintain it. The much higher air speed attainable in the new tunnels is of the greatest value in view of the continuously increasing speed of modern aircraft.

Spinning

The "spin" has been the cause of many accidents in the past, owing to failure to recover. Adequate side force on the fin and rudder and the body of the aeroplane will stop the rolling motion of the wings. But, unfortunately, under spinning conditions the fin and rudder may become entirely inoperative owing to being "blanked out" by the tailplane. The subject is complicated by the action of the centrifugal forces on the various parts of the machine, and the weight distribution may be such that these forces either help or hinder recovery from a spin. Further, what is a good weight distribution in one design of machine may be bad in a different type.

This difficult subject has been dealt with in a simplified manner for the assistance of aircraft designers. A special report has been published which explains in simple language the various factors governing the spin and gives a condensed collection of data on the subject. Largely as a result of the experimental work carried out at the laboratory, the subject is much better understood than was the case a few years ago, and it is seen that no very great difficulties should lie in the way of designing aeroplanes which are free from spinning troubles.

Landing of Aeroplanes

Great strides have been made by the designers of modern aeroplanes in the reduction of head resistance, and the progress is represented by higher and higher top speeds. But this low resistance becomes a serious disadvantage in the process of landing the aeroplane. The pilot is compelled to approach the aerodrome at a fine angle to the horizontal and has to skim over the ground for a considerable distance before his speed is low enough to touch down; after this the use of wheel brakes enables him to pull up quickly. In order that landing may be carried out in a reasonably small space, especially when there are tail obstacles to be cleared at the edge of the aerodrome, it is necessary to fit some form of air brake, which will increase the head resistance of the machine whilst it is still in the air. Certain forms of projecting surfaces or flaps fitted to the wings have been tested on the model scale at the laboratory, and have been shown to fulfil practical requirements. Some of these flaps have the advantage that they increase the lift as well as the resistance, so that their use would enable the present lowest possible landing speed to be considerably reduced. Certain of these devices are shortly to be tried on the full scale.

THE AVRO TYPE 641

FOR COMFORT AND SOLIDITY: Spectacular performance has not been sought in the design of this "Lynx"-engined Avro. The machine is a 4-5 seater with dual control, and is finished and upholstered in a style comparable with that of a high-class motor car.

FOREIGN AIRCRAFT

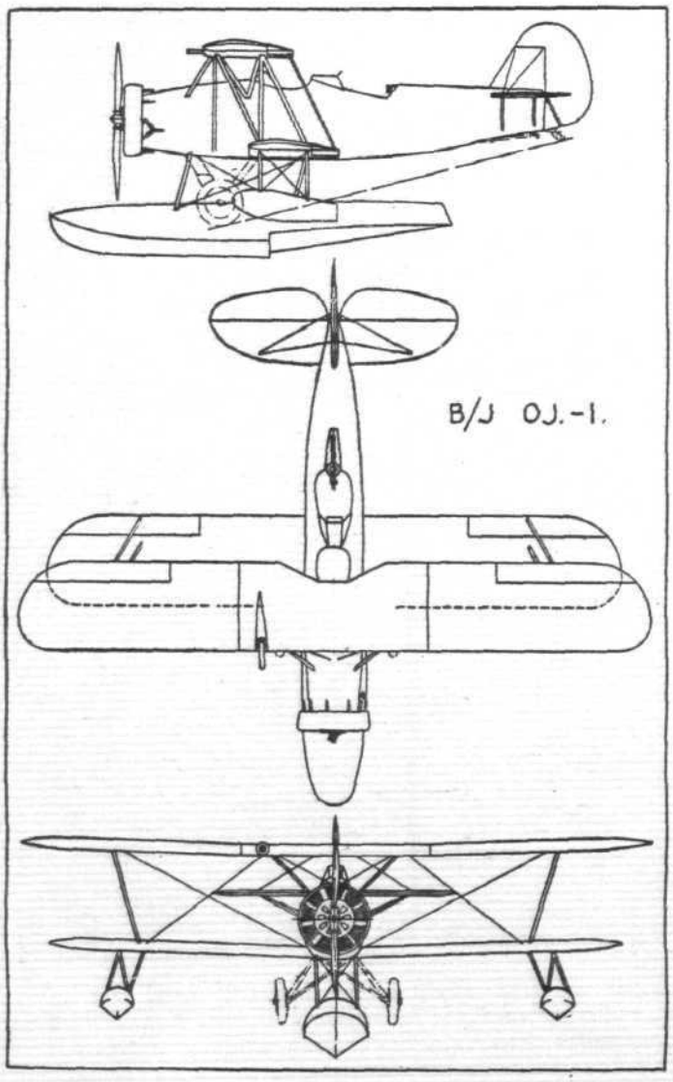
THE B/J OJ-2 OBSERVATION AIRCRAFT

Generally similar to the OJ-1 Observation Machine supplied in quantities to the U.S. Navy

FOR NAVAL OBSERVATION : The B/J OJ-2, shown here fitted with a "Wasp Junior" engine.

BUILT primarily for observation work with the U.S. Navy, the B/J OJ-2 machine, constructed by the B/J Aircraft Corp. of Baltimore, Maryland, is readily adapted for Army Co-operation work or for use as a commercial two-seater. It may be used as either a landplane or a seaplane. The machine is of metal construction with fabric covering, except for the wings, which are of wood. Either the Pratt & Whitney "Wasp Junior," of 400 h.p., or the "Wasp Senior" 550 h.p. may be used. Although originally produced with open cockpits, the machine may be supplied with a cabin top. A large amount of work with Zap flap and aileron installation has been done on this aircraft.

The fuselage is of welded chrome molybdenum steel truss type with duralumin channel fairings. Metal sheet is used to cover the forward portion, while the rear, except the "turtle" deck, is covered with fabric. The engine mounting is detachable. Wooden construction is mainly used for the wings. The spars are of the wooden box type, with flanges of spruce and webs of plywood.



The ribs are of the truss type, made from spruce and plywood. Duralumin tubular compression struts and swaged steel wires are used for the drag system. Duralumin sheet extending to the rear of the front spar on both surfaces forms the leading edges. Frise ailerons are fitted to all four planes. Duralumin construction covered with fabric is used for the tail surfaces. The tail plane is adjustable from the pilot's cockpit in flight.

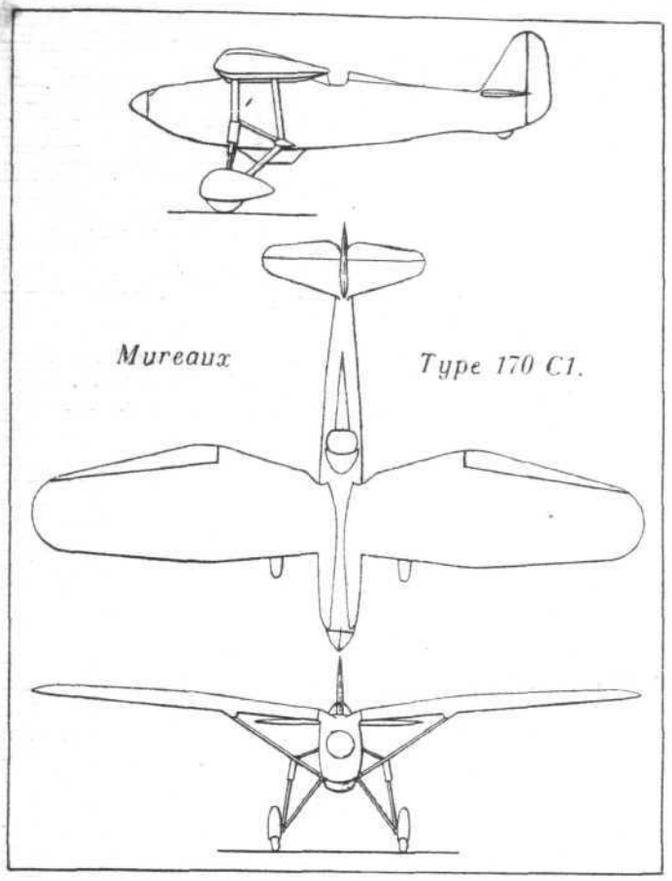
An undercarriage of the conventional split type may be fitted, or a cross-axle type with an internal splined shock absorber leg, which allows the whole to travel in a vertical direction only, the remainder of the gear being rigidly stressed. The tail wheel is of the swivelling type rotating through 360 deg., and may be locked from the cockpit. For use as a seaplane, the aircraft is fitted with a central main float and two wing-tip floats of duralumin construction. Within the fuselage is tankage for 90 gall. of fuel. When the "Wasp Senior" engine is installed, two auxiliary tanks of approximately 20 gall. capacity each may be installed. A Hamilton Standard metal airscrew and low-drag wing cowling are generally used.

Provision is made for the installation of wireless, emergency flotation gear and pyrotechnics. One fixed 0.30 calibre Browning gun is installed in the starboard side of the upper centre-section, and another Browning gun is mounted over the rear cockpit. Five hundred rounds of ammunition are provided for the fixed gun and six hundred rounds for the rear gun. Bomb racks may be fitted to the port lower wings of the "Wasp Junior" model, and on both lower wings of the "Wasp Senior" type. A total bomb load of 500 lb. may be carried by the more powerful version, while the "Wasp Junior" powered type carries only 250 lb.

The table applies to the standard OJ-2 fitted with the Pratt & Whitney "Wasp Junior." When fitted with the "Wasp Senior" and a cabin top over the cockpit the top speed at sea level is estimated to be 175 m.p.h., the normal range at cruising speed 548 miles, the maximum range 790 miles, and the absolute ceiling 19,200 ft. With an engine rated at 500 h.p. at 11,000 ft. the estimated speed at that height is 190 m.p.h.

B/J OJ-2
Pratt and Whitney "Wasp Junior"

DIMENSIONS	
Span	33 ft. 8 in. (*10,28 m*)
Length	25 ft. 8 in. (*7,84 m*)
Height	10 ft. 10 in. (*3,30 m*)
Wing area	284·2 sq. ft. (*30,55 m²*)
WEIGHTS	
Weight empty	2,323 lb. (*1 058 kg*)
Useful load	1,390 lb. (*631 kg*)
Gross weight	3,713 lb. (*1 688 kg*)
Wing loading	13·1 lb./sq. ft. (*63,9 kg/m²*)
Power loading	8·9 lb./h.p. (*4,05 kg/h.p.*)
PERFORMANCE	
Speed at sea level	154 m.p.h. (*248 km/hr*)
Speed at 5,000 ft. (*1 525 m*)	150 m.p.h. (*242 km/hr*)
Speed at 10,000 ft. (*3 050 m*)	142 m.p.h. (*228 km/hr*)
Speed at 15,000 ft. (*4 575 m*)	121 m.p.h. (*195 km/hr*)
Stalling speed	57 m.p.h. (*92 km/hr*)
Climb to 10,000 ft. (*3 050 m*)	12·1 min.
Service ceiling	15,300 ft. (*4 660 m*)
Absolute ceiling	16,700 ft. (*5 090 m*)
Range at cruising speed	530 miles (*854 km*)



THE MUREAUX 170 C.1

A French single-seater fighter with a top speed of 236 m.p.h. at 15,580 ft.

ALTHOUGH it has not yet been ordered in quantities for re-equipment purposes, as the prototype was completed too late for participation in the recent competition for single-seater fighters, the Mureaux 170 C.1, constructed by Les Ateliers de Constructions du Nord de la France, of Paris and Les Mureaux, is generally recognised as one of the finest fighters which have appeared in France during the past two or three years. It was one of the exhibits on the Mureaux Stand at the Paris Aero Show in November, 1932, when it attracted much favourable comment. It is claimed that the machine is the fastest French Service aircraft. This we can believe, although our Hawker "Super Fury" is probably about 15 m.p.h. faster.

The new Mureaux is a pretty aircraft, especially in plan form, as may be gathered from the G.A. drawings. The strut braced wings, which are of a type known on the Continent as "aile d'insecte," are unusual in more than one respect. Their maximum chord and thickness occur slightly outboard of the strut attachment, and the roots are merged into fairings behind the cylinder banks of the Vee type engine. In this latter respect the machine is similar to the Gloster racing biplanes of some years back. Two duralumin spars of I section are employed for the wing structure. Rigidly controlled unbalanced ailerons are fitted.

An all-metal fuselage is used, covered with duralumin sheeting. In section the fuselage is flat-sided with elliptical top and bottom. A Hispano Suiza 12 Xbrs geared and supercharged engine developing 690 h.p., driving a Ratier airscrew, is carried on a duralumin tube mounting. A radiator with adjustable shutters is mounted beneath the fuslage between the radius rods of the undercarriage. Originally the Hispano Suiza "X" type was designed as a water-cooled engine, but Prestone or ethylene glycol cooling is being employed in some of the later models, when radiator size is reduced and performance correspondingly increased. A fuel tank with a capacity of 315 litres is carried within the fuselage behind the fireproof bulkhead.

Armament consists of two fixed machine guns mounted within the wings outside the periphery of the airscrew, in which position no synchronising gear is needed. This arrangement clears the pilot's cockpit of the breeches of the guns and the C.C. reservoir. An unusually good view is obtained from the cockpit, mainly as the result of the use of the gull-type wings.

MUREAUX 170 C.1
Hispano Suiza 12 Xbrs Engine

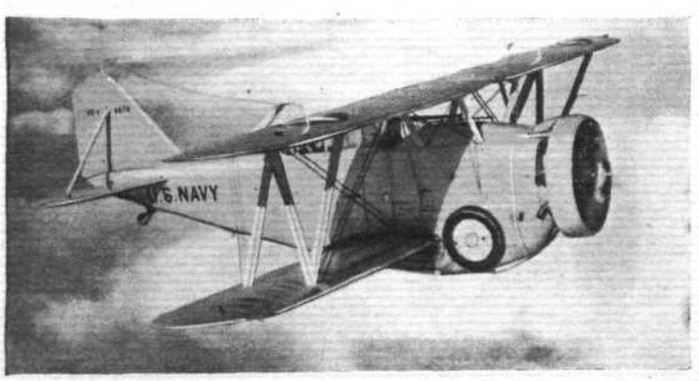
DIMENSIONS	
Span	37 ft. 4 in. (*11,4 m*)
Length	25 ft. 6 in. (*7,8 m*)
Height	9 ft. 4 in. (*2,86 m*)
Wing area	210·4 sq. ft. (*19,56 m²*)
WEIGHTS	
Weight empty	2,531·3 lb. (*1 148 kg*)
Weight loaded	3,580·9 lb. (*1 624 kg*)
PERFORMANCE	
Speed at 6,550 ft. (*2 000 m*)	205·5 m.p.h. (*334 km/hr*)
Speed at 11,480 ft. (*3 500 m*)	222·5 m.p.h. (*358 km/hr*)
Speed at 15,580 ft. (*4 750 m*)	236 m.p.h. (*380 km/hr*)
Speed at 21,300 ft. (*6 500 m*)	231 m.p.h. (*372 km/hr*)
Speed at 26,200 ft. (*8 000 m*)	217·5 m.p.h. (*350 km/hr*)
Climb to 6,550 ft. (*2 000 m*)	2 min. 36 sec.
Climb to 11,480 ft. (*3 500 m*)	4 min. 20 sec.
Climb to 15,580 ft. (*4 750 m*)	6 min.
Climb to 21,300 ft. (*6 500 m*)	9 min. 5 sec.
Climb to 26,200 ft. (*8 000 m*)	12 min. 45 sec.

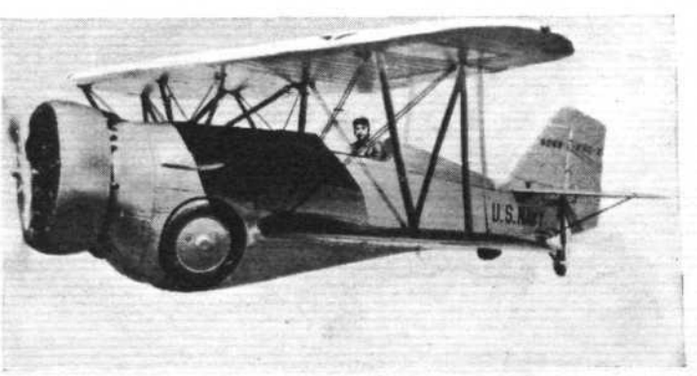
RETRACTABLE UNDERCARRIAGES

Experiments in U.S.A. with Service Biplanes

AMERICA has taken some bold steps in the fitting of retractable undercarriages to biplanes. We published in our issue of January 4, 1934, a view of the Curtiss "Raven," in which the wheels fold up inwards. Here we show two American military biplanes, a Grumman and a Curtiss, both with retractable undercarriages.

The Grumman Aircraft Corporation, of New York, has done a large amount of work towards perfecting retractable undercarriages. In 1931 it designed for the U.S. Navy an amphibian landing gear, consisting of a central float and wheels, so mounted that they were housed, when retracted, in recesses in the floats. Deck arresting gear was fitted.





CLEANED UP: (Left) The Grumman FF-1 two-seater fighter with retractable undercarriage and Wright "Cyclone F" engine, and (right) an experimental Curtiss "Goshawk" (F-11C) fighter, with a similar type of undercarriage, also fitted with a "Cyclone."

From the Clubs.

Events and Work at the Clubs and Schools

HANWORTH

Four new members joined the club during the week, and Mr. Dampney completed his licence tests only twelve days after joining. Fifty-four hours were flown, including a cross-country by one member to Liverpool.

MIDLAND

The new "Moth Majors" are being kept very busy, and a total of 50 hr. 15 min. was flown during the week. The chief instructor, Mr. W. H. Sutcliffe, flew to Ireland with Mr. C. Gleeson, and Mr. J. Wright to Croydon. Last Friday a Railway Air Services' "Dragon" put in at Castle Bromwich and was met by railway representatives and by Alderman James.

SCOTTISH

The annual club display will be held on May 19 and 20 at Renfrew, with three concentrated shows on each afternoon and evening and facilities for the usual joyriding. In last month's edition of that excellent club magazine, *The Scottish Flyer*, the editor does not fail to rub in the fact that Scotland has the magnificent total of two civil aerodromes. High winds, too, appear to have "caused a slump in the first solo market."

BROOKLANDS

With better weather, a total of 86 hr. 30 min. was flown, including several cross-countries. Some 15 private owners arrived to watch the International Trophy Race. The G.Q. Parachute Co. have been busy, and five jumps were made—one unsuccessful, in as much as Mr. Fairlie, the expert, of all people, landed well and truly in the Sewage Farm. He explained that he had been asked to open the new bathing pool. One of the successful ones, Mrs. Allington, is a private owner with six sons (*vide* the daily press) and has, after this test, placed an order for two G.Q. parachutes. Flt. Lt. I. W. C. Mackenzie has joined the staff as instructor.

CAMBRIDGE

Four pupils of Marshall's Flying School, Ltd., have just passed all licence tests, and the flying during the week has totalled 42 hr. 45 min. The school has just completed the C. of A. overhaul of a Klemm.

YORKSHIRE

During the past fortnight some 60 hours have been flown at Yeadon by the Yorkshire Aeroplane Club, Ltd. which is now a self-contained company, and ten new members have been admitted.

LIVERPOOL

Last week was the best during April as far as Hooton Park was concerned, for high winds and rain have been persistent, and a total of 75 hr. 55 min. was flown.

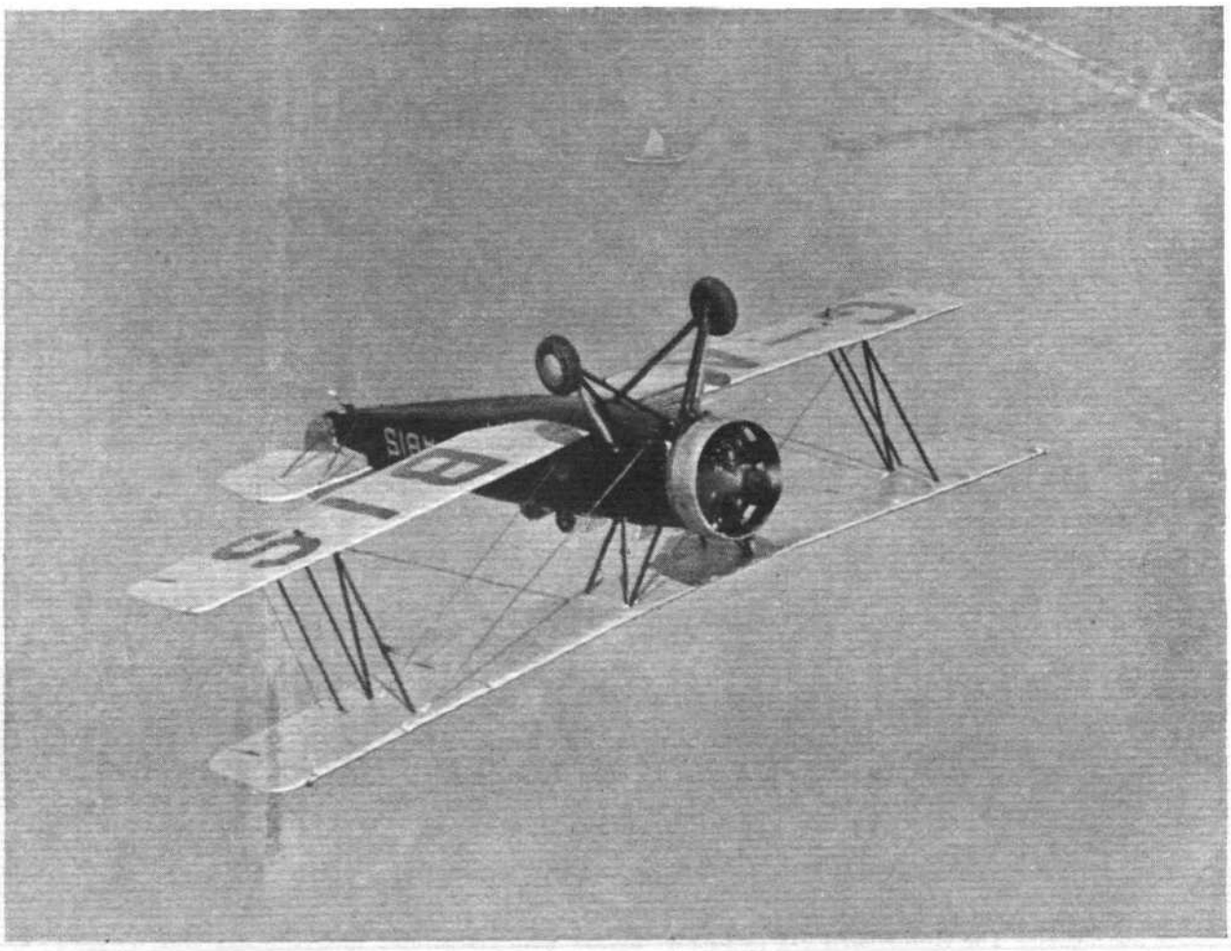
HAMPSHIRE

The Derby Draw last year assisted so considerably towards the purchase of a "Gipsy Moth" that another is being held, and the actual draw will take place in the clubhouse on June 3.

HATFIELD

Last month 317 hours were flown by the London Aeroplane Club, a figure which compares well with last year's April total of 236 hours. With the addition of a "Tiger Moth," the fleet now numbers seven. Arrangements are well in hand for the garden party which is to be held on Sunday, June 3. Sir Derwent Hall-Caine flew with Miss Ishbel MacDonald to the Isle of Man last Friday, and on the same day the Short "Scion" put in an appearance, piloted by Mr. Piper, and Mr. Brie arrived with an Autogiro.

The R.A.F. Flying Club flew 53 hr. 50 min. last month. Their display will be held this year on Saturday, June 16, and a unique programme including all the usual events, with formation aerobatics and a special "extra" produced by Imperial Airways, Ltd.



INVERSION: An Avro Tutor from A.S.T. over Southampton Water. The attitude of the sailing vessel is sufficient proof that the picture itself has not been inverted!

SUSSEX

Plans for the aerial garden party and flying display, which are to be held at Wilmington on Empire Air Day, are now complete, and include an arrival competition, a gymkhana, and a delayed action parachute descent by Mr. John Tranum.

GATWICK

A "Puss Moth" is now available at the B.A.T. School for instruction, solo flying, or charter. Cross-country flights during the week included trips to Portsmouth, Hayling Island, Southampton, Reading and the Isle of Wight. In all, 32 hours were flown.

NORFOLK AND NORWICH

The event of the week was a flight to Switzerland by M. R. le Coultre and the Instructor. They left the aerodrome on Sunday at 6.30 a.m. for Basle, flying ABCG, which is fitted with an extra tank to give a five-hours' range. Club machines formed a parting escort. Earlier in the week a flight was made to Tetbury, and, in spite of bad weather, quite a lot of flying has been done.

LANCASHIRE

Club aircraft made three double journeys to Hull last week, and Woodford is expecting a return raid from Yorkshire at any moment. On Saturday a member who has not flown since 1918 made a first solo, and his spins, loops, and stalled turns showed that in fifteen years he had not lost his lightness of touch. Among the visitors was Lord Amherst, with Mr. Eckersley, in a Ford "Trimotor." Flying hours totalled 38.

NOTTINGHAM

On March 28 the Nottingham Flying Club was taken over from N.F.S., with J. J. Hall, Esq., J.P., Capt. L. W. Hall and Mr. T. W. Shipside as Directors. Capt. Hall, who has been flying for a number of years as North Eastern Aviation, will be in charge of the aerodrome, Mrs. Hall will manage the clubhouse, and Capt. R. T. Shepherd will continue in his work as instructor. Since the new arrangement, 76 hr. have been flown with several long cross-countries.

CINQUE PORTS

Very bad weather reduced the flying at Lympne to 19 hours, and the great event was, of course, the return of Rubin and Waller, the Club's assistant instructor, in unofficial record time from Port Darwin. The event is remarkable in that Mr. Kenneth Waller was taught to fly by Mr. K. K. Brown in 1930, and that Mr. Waller taught Mr. Rubin last summer! Miss Jean Batten arrived from the Continent on Sunday, and does not appear to be suffering from any ill-effects after her mild crash near Rome.

BRISTOL

The Bristol and Wessex Aeroplane Club has ordered a new "Gipsy Major Moth." A local newspaper, in co-operation with the club, is giving three flying scholarships for men, and one hundred candidates will be accepted for trial flights by the club, from whom six finalists will be selected. After a further flying test the three scholarship winners will be chosen, and the three unsuccessful finalists will be given consolation prizes in the form of a grant of £10 towards the cost of their flying training. Thirty-nine hours were flown during the week by the club. Both landing and cross-country flying competitions are to be organised during the summer.

CARDIFF

Rough weather reduced flying to a minimum on Saturday and Sunday, but a total of 26 hr. 40 min. were flown during the week. Maj. Claude Martyn, High Sheriff of Monmouthshire, has very kindly consented to become a Vice-President of the Club.

HAMPSHIRE

Four machines took part in last Sunday's "dawn patrol" to Hanworth, but a high wind prevented instruction later on that day. Altogether 47 hr. 55 min. were flown during the week, including a flight by Mrs. G. E. Alington to Brooklands in order to make a test of a parachute.

KENT

Twenty-four hours were flown during the week at Bekesbourne, including two first solo flights. Among the visitors was a certain Mr. Gordon Olley with a Dragonful of passengers, held up by fog. A formation of two "Moths" and an Autogiro visited Wilmington during the week.

OXFORD

Another machine, a "Cirrus II Moth," has been obtained to assist the hard-worked "Avian" of the Universal Aircraft Services School which operates at Witney aerodrome. Flying time for the week ending May 6 totalled 16 hr. 30 min., and the formation of the Club is well advanced, and the club-house should be ready for occupation in another three weeks. There are now 54 members, and full details may be obtained from the Pilot Instructor.

READING

Amateur pilots who are unable to own a machine, yet who prefer to do serious flying, will be glad to learn that the Reading Aero Club has come to an arrangement with Phillips & Powis whereby approved members may hire machines for £3 10s. per week-day and £4 per Sunday. These figures include insurance. The club has challenged its neighbours to slip unobserved through the "defences" between 8 and 8.30 a.m. on May 20, and there will be a breakfast instead of a firing squad for the successful ones. Saturday, June 9, is the date fixed for the annual garden party at Woodley.

Of the six machines, including two "Hawks" and four "Moths," which took part in the Hanworth raid on Sunday, only one, a "Cirrus Moth" partly enclosing Messrs. Warren and Bishop, got through miraculously without detection, after being attacked by a "Courier" on the way. High winds thereafter prevented flying, though instruction on "Hawks" was carried on.

The annual W. J. Barnes Challenge Cup competition opened on May 1 and will close on August 1. Entries close on May 25. Marks, up to a maximum of 200, will be allotted for the various tests which must be "flown off" before certain dates, and the number of hours to the credit of each competitor will be taken into consideration. The tests are among the most useful and all-embracing that have been set and include maintenance, emergency measures, general flying, forced landings, accurate spins, cross-countries, and an oral examination dealing with points that are often neglected by the club pilot. The member who comes through the competition with good marking will be a thoroughly safe pilot. A leader on the subject appears in this issue.

SOARING

A THOROUGHLY gusty wind blew obliquely up the face of Dunstable Downs on Saturday, making soaring uncomfortable and almost impossible for ordinary machines. Collins, in his *Rhönadler*, stayed up for 2½ hours, rising to a maximum of 900 feet. At tea-time conditions improved. Corp. Manuel brought out his new *Blue Wren*, in which the ailerons and elevator have been geared down, and "wash-out" (½ in. per 3 ft.) introduced. The ailerons are covered with oak veneer and the wing torsion-box is slightly extended. Other alterations are minor, but in the right direction. From her maiden launch she was soared by the Club Captain for 70 minutes until the wind dropped at sunset. After a thorough trial, the pilot expressed his unbounded praise. She combines the sweetness of the *Crested Wren* with a distinctly improved performance.

On April 22, conditions at Sutton Bank were better than at any time since the B.G.A.'s Competitions during last October. At lunch time a 10-12 m.p.h. wind was blowing from due west, and the Bradford and County Gliding Club started operations. R. G. Robertson was packed in the "Professor" sailplane with several layers of overcoats and bolstered with sandwiches. His intention was to do a five-hours' duration flight. He was launched at 2 p.m. and landed at 7.15 p.m. Meanwhile, J. P. Watson soared the *Prüfling* at frequent intervals, and occasionally three machines were in the air together.

The chance of finding a good gliding site in Wiltshire should be considerable, and it is understood that a new gliding club has been formed under the name of the Wiltshire Aviation Club.

THE ROYAL AIR FORCE

London Gazette, May 1, 1934

General Duties Branch

E. R. Berrill is granted a short service commn. as Acting Pilot Officer on probation with effect from and with seny. of April 16.

The follg. Pilot Officers are confirmed in rank :—W. S. Jenkins (April 10) ; J. H. Gratwick Sarll (April 11).

Pilot Officer on probation J. P. Selby is confirmed in rank (March 29).

The follg. Pilot Officers are promoted to the rank of Flying Officer March 16) :—D. G. Lewis ; J. K. Rotherham.

Wing Comdr. F. Fowler, D.S.C., A.F.C., is placed on the half-pay list, scale A (April 5) ; Group Capt. A. C. Winter, O.B.E., is seconded for duty as Air Adviser to the Greek Government (April 26) ; Sqd. Ldr. P. Warburton, M.B.E., ceases to be seconded for duty with the Iraq Government (April 1) ; Lt. C. P. Wade, R.N., Flying Officer, R.A.F., relinquishes his temp. commn. on return to naval duty (March 15, 1933) (substituted for the notification in the *Gazette* of April 18, 1933) ; Lt. J. M. Wintour, R.N., Flying Officer, R.A.F., relinquishes his temp. commn. on retirement from the Royal Navy (April 1) ; Flt. Lt. G. M. F. O'Brien, D.S.C., is placed on the retired list (April 28) ; Flt. Lt. W. M. Fry, M.C., is placed on the retired list at his own request (May 1).

Medical Branch

Flt. Lt. (Hon. Sqd. Ldr.) G. S. Ware, M.B., B.S., M.R.C.S., L.R.C.P., relinquishes his temp. commn. on completion of service and is permitted to retain the honorary rank of Squadron Leader (April 7) ; Flt. Lt. (Hon. Sqd. Ldr.) J. G. Skeet, M.R.C.S., L.R.C.P., relinquishes his temp. commn. on completion of service (April 14).

ROYAL AIR FORCE RESERVE
RESERVE OF AIR FORCE OFFICERS

General Duties Branch

R. A. Farquhar is granted a commn. as Pilot Officer in Class A (March 27).

The follg. Flying Officers are transferred from Class A to Class C :—R. Mountain (Oct. 15, 1933) ; B. E. Herbert, D.C.M. (Oct. 24, 1933).

The commn. of Pilot Officer on probation R. H. Adams is terminated on cessation of duty (March 29).

SPECIAL RESERVE

General Duties Branch

W. B. Houston is granted a commn. as Pilot Officer on probation (March 24).

The follg. Pilot Officers are promoted to the rank of Flying Officer :—W. B. Royce (Dec. 4, 1933) ; H. M. Magrath (Jan. 8).

The notification in the *Gazette* of April 24 concerning Pilot Officer R. F. G. Lea is cancelled.

AUXILIARY AIR FORCE

General Duties Branch

No. 605 (County of Warwick) (Bomber) Squadron.—F/O. J. R. H. Baker relinquishes his commn. on completion of service (Feb. 3) ; P/O. R. A. Farquhar resigns his commn. (March 27).

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified :—

General Duties Branch

Group Captains : H. Gordon-Dean, A.F.C., to Electrical and Wireless School, Cranwell, 23.4.34, to command, vice A/Cdre. R. H. Verney, O.B.E. J. Sowrey, A.F.C., to R.A.F. Base, Malta, 16.4.34, to command, vice Wing-Com. R. L. G. Marix, D.S.O. A. C. Winter, O.B.E., to Special Duty List, 26.4.34, whilst seconded for duty as Air Adviser to the Greek Government.

Wing Commanders : R. L. G. Marix, D.S.O., to Station Headquarters, Hal Far, 16.4.34, to command, vice Wing-Com. E. R. Pretyman. H. K. Thorold, D.S.C., D.F.C., A.F.C., to No. 70 (B.T.) Squadron, Hinaidi, Iraq, 7.4.34, to command, vice Wing-Com. G. C. Bailey, D.S.O.

Squadron Leaders : J. P. Coleman, A.F.C., to No. 2 Armoured Car Company, Ramleh, Palestine, 5.4.34, to command. S. S. Benson, A.F.C., to Dept. of Air Member for Supply and Research, Air Ministry, 29.4.34, for equipment (engineer) staff duties.

Flight Lieutenants : M. Griffiths, to No. 504 (Co. of Nottingham) (B) Sqdn., Hucknall, 23.4.34. G. A. Hadley, to R.A.F. Depot, Uxbridge, 23.4.34. G. H. Loughnan, to No. 32 (F) Sqdn., Biggin Hill, 22.4.34. A. H. Love, to Special Duty List, 28.4.34, for duty with the Army, on appointment as G.S.O. III, Western Command. C. B. R. Pelly, M.C., to No. 19 (F) Sqdn., Duxford, 26.4.34.

Flying Officers : C. G. Hill, to No. 4 (A.C.) Sqdn., South Farnborough, 22.4.34. A. W. Sweeney, to No. 600 (City of London) (B) Sqdn., Hendon, 20.4.34. L. I. T. Whitaker, to No. 4 (A.C.) Sqdn., South Farnborough, 22.4.34. E. M. F. Grundy, to Station Headquarters, North Weald, 23.4.34. B. H. Jones, to R.A.F. Base, Leuchars, 23.4.34.

The following Flying Officers are posted to Electrical and Wireless School, Cranwell, on 22.4.34 :—L. J. Crosbie (23.4.34) ; A. T. Monks, W. T. H. Nichols, W. P. G. Pretty (23.4.34) ; R. C. Richmond, A. M. Rodgers, T. U. C. Shirley, J. A. Tester, H. B. Wrigley (23.4.34).

Acting Pilot Officers : E. R. Berrill, to No. 4 Flying Training School, Abu Sueir, Egypt, 16.4.34, on appointment to a short service commn. H. A. R. Holford, to R.A.F. Depot, Uxbridge, 21.4.34.

Accountant Branch

Flight Lieutenant W. E. V. Richards, to No. 208 (A.C.) Sqdn., Heliopolis, Egypt, 9.4.34.

Medical Branch

Squadron Leader J. T. T. Forbes, to Home Aircraft Depot, Henlow, 24.4.34, for duty as Medical Officer.

NAVAL APPOINTMENT

The following appointment has been made by the Admiralty :—

Promotion

Lt. (F/O., R.A.F.). H. C. Ranald to rank of Lt. Com. (seny. April 15).

STAFF COLLEGE, QUETTA

The undermentioned officer has completed satisfactorily the course at the Staff College, Quetta, which terminated on December 17, 1933 :—

Wing Com. M. Thomas, D.F.C., A.F.C., *p.s.a.*

AIR FORCE LIST

The May issue of the Air Force List has now been published. It can be purchased (price 2s. 6d.) from H.M. Stationery Office at the following addresses :—Adastral House, Kingsway, London, W.C.2 ; 120, George Street, Edinburgh ; 2, York Street, Manchester ; 1, St. Andrew's Crescent, Cardiff ; 15, Donegall Square, Belfast ; or through any bookseller.

FLEET AIR ARM SQUADRONS AND FLIGHTS

The following squadrons disembarked from H.M.S. *Furious* on April 13, 1934 :—No. 801 (F.F.) Squadron, to R.A.F. Station, Netheravon ; No. 822 (F.S.R.) Squadron, to R.A.F. Station, Netheravon ; No. 811 (F.T.B.) Squadron, to R.A.F. Base, Gosport.

R.A.F. STAFF COLLEGE QUALIFYING EXAMINATION

The following officers passed the R.A.F. Staff College Qualifying Examination which was held in January, 1934. Selection of officers to attend the next Staff College course will shortly be made from these officers and from those who previously qualified and are still eligible :—

Royal Air Force

Flt. Lieuts. R. L. R. Atcherley ; E. D. Barnes, A.F.C. ; J. N. Boothman, A.F.C. ; N. Carter ; R. H. Carter ; A. D. Davies ; E. S. C. Davis, A.F.C. ; F. E. R. Dixon, M.C. (Stores branch) ; G. H. Doveton (Stores branch) ; A. V. Hammond ; V. Harris ; F. W. Long ; W. E. G. Mann, D.F.C. ; G. E. Nicholetts, A.F.C. ; H. W. Pearson Rogers ; L. F. Pendred, M.B.E., D.F.C. ; N. A. P. Pritchett ; J. H. C. Wake ; E. L. S. Ward ; C. W. Weedon ; T. M. Williams, M.C., D.F.C.

Flying Officers W. A. D. Collingwood, W. J. B. Elliott, H. W. Penney, M. S. Shapcott (Stores branch).

Dominion Air Forces

Royal Australian Air Force.—Flt. Lt. A. L. Walters.

Royal Canadian Air Force.—Flt. Lieuts. A. P. Campbell, B. G. Carr-Harris, F. G. Wait.

R.A.F. FLYING INSTRUCTORS

The Air Council have had under review the policy governing the provision of flying instructors. The experimental procedure whereby the selection of officers for flying instructor courses is made at the same stage of service as the selection of officers for specialisation, has proved satisfactory in providing suitable officers for this work. The Council propose, therefore, to continue this system and to assimilate in certain respects the career of flying instructors even more closely with that of specialist officers.

One of the results of the system of time promotion to flight lieutenant is to eliminate the necessity for a separate classification of flight lieutenant and flying officer flying instructor posts. It will now be practicable to regard existing flight lieutenant and flying officer flying instructor posts as forming one class—which it is proposed to designate "flight lieutenant or flying officer" posts—with the consequent advantage that it will be unnecessary to repost a flying officer serving in a flying instructor post if, during his tenure of it, he is promoted to flight lieutenant.

The essential distinction in future will be between flying instructors serving in their first tour as such and those serving in their second or third tours. It will, therefore, be possible to put flying instructor posting on lines similar to specialist posting. After completing his first three-year tour between four and seven years' service, a flying instructor will revert to other Air Force duty for a tour of two to three years. He will be earmarked for return to flying instructor employment at the end of his reversion posting. When this time comes he will automatically return to flying instructor employment for his second tour, and normally no other posting, except in the case of officers selected early for the Staff College, will be allowed to interfere with this. After completing a second flying instructor tour, an officer will revert again to other Air Force duty and will be available later in the rank of squadron leader for a third flying instructor tour. It will not be necessary, however, to earmark more than a proportion of officers completing their second tour to return to flying instructor employment for a third tour.

Flying instructor posts at present classified as flight lieutenant posts and flying officer posts respectively, will in future be classified as "flight lieutenant or flying officer" posts. It is recognised that the duties of a number of these posts make them appropriate to second-tour officers, and they will be so filled, so far as second-tour officers are available. The fact that a post has hitherto been classified as a flight lieutenant post will not necessarily entitle it to a second-tour instructor ; it may be filled by one of the more senior of the officers in their first tour.

The Council have further decided that medium-service flying instructors shall be required to give two tours as flying instructor with an interval of reversion to other employment between them. Selection of short service officers for permanent commissions and medium service and their selection for specialist and flying instructor training will continue to be made in the fourth year of service ; short service officers entered subsequently to April 1, 1932, will, therefore, have an average of seven years to serve after selection for medium service. Of this period medium-service flying instructors would spend the first three years and the last two in flying instructor employment.

The conditions of the provision of flying instructors from airman pilots remain unchanged.

SERVICE NOTES

The East African Tour

THE mixed formation of troop carriers and general purpose aircraft, led by Wing Com. R. T. Leather, A.F.C., which has been touring through East Africa, arrived back at Khartoum on April 26, and at Heliopolis on April 30. The formation started from Heliopolis on February 26.

No. 2 Armoured Car Company

SQD. LDR. J. P. COLEMAN, A.F.C., after completing three years in command of No. 6 (Bomber) Squadron (equipped with "Gordons"), has been appointed to command No. 2 Armoured Car Company at Ramleh. No. 6 B.S. is stationed at Ismailia, but has one flight at Ramleh, with which the new C.O. of the Armoured Car Company must therefore be quite familiar.

"Coal" Petrol for the R.A.F.

EXTENSIONS are being carried out this summer of the low-temperature carbonisation plant at Askern, near Doncaster, to meet the increasing demand for Coalite, fuel oil and petrol for the Royal Air Force. The additions include a complete battery of retorts and the necessary conveying gas-treatment plant. It is hoped that the new works will be completed by October, and they will enable the Askern output of Coalite, petrol and fuel oil to be increased by 17 per cent.

No. 8 (Bomber) Squadron at Hodeida

WHEN the Red Sea port of Hodeida was threatened by the advance of the troops of King Ibn Saud in his war with the Imam of Yemen, H.M. Sloop *Penzance*, followed later by H.M.S. *Enterprise*, steamed to Hodeida to take off British subjects, mostly Indians, and convey them to the British island of Kamaran. No. 8 (Bomber) Squadron from Aden also sent eight Fairey III.F aeroplanes to Kamaran, and they demonstrated over Hodeida to warn the belligerents that British subjects must be respected. The aircraft have now been withdrawn as order has been restored in the town.

No. 205 (Flying Boat) Squadron

GROUP CAPT. SYDNEY SMITH, O.B.E., who commands the Royal Air Force in the Far East, is himself leading the three "Southampton" flying boats of No. 205 (F.B.) Squadron on their tour from Singapore to Hong Kong and back. They are engaged on a circular tour of some 4,000 miles in the South China Sea, and have called at North Borneo, the Philippines, and Hong Kong. They are now on their way back to Singapore, and on the way are calling at French Indo-China, Malaya, and other places.

H.M. Aircraft Carrier "Furious"

H.M.S. *Furious* has been ordered to leave Devonport on May 31 to join the Mediterranean Fleet until October, to take the place of the *Glorious*, which has arrived at Devonport for a refit. This refit is stated to cost about £239,280. The *Hermes* is also undergoing a refit, and the *Eagle* has taken her place on the China station. When the *Hermes* is ready, probably in the autumn, she will return to China, and the *Eagle* will rejoin the Mediterranean Fleet to replace the *Glorious*.

Instructor to Greek Naval Air Service

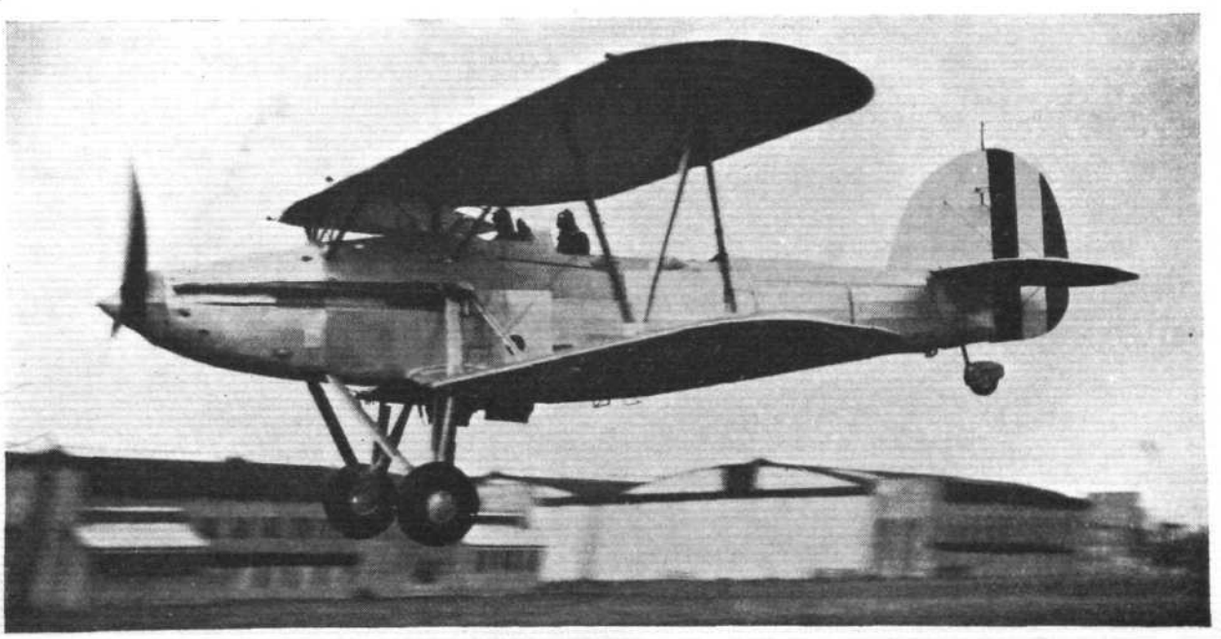
GROUP CAPT. A. C. WINTER, O.B.E., has been appointed Instructor to the Greek Naval Air Service. He has seen service in the Mediterranean before, as he was secretary to Admiral Mark Kerr when the latter commanded the Adriatic Squadron during the war. The Admiral, in his book *Land, Sea and Air*, speaks of him as one of a staff "which made up for their smallness in numbers by their efficiency, loyalty and zeal." A former naval officer, Group Capt. Winter transferred to the Royal Air Force in 1919, and has held several important posts, including the command of No. 208 (A.C.) Squadron (a former R.N.A.S. unit) in Egypt.

Changes at Malta

WING COM. R. L. G. MARIX, D.S.O., once an officer in the R.N.A.S. squadron commanded by the late Air Commodore Samson, whose armoured cars did such gallant work from Dunkirk during the Allied retreat from Mons, has lately been in command of the Base at Calafrana, Malta, which administers No. 202 (Flying Boat) Squadron —the unit which has for so long been "temporarily" equipped with float-planes. He is now to change to the other Malta station of Hal Far, which administers the units of the Fleet Air Arm when ashore. The command of Calafrana is now made over to Group Capt. John Sowrey, A.F.C. There are two Sowreys in the Royal Air Force, and they are sometimes confused. It was Wing Com. Frederick Sowrey, D.S.O., M.C., A.F.C., who won distinction during the war by shooting down the Zeppelin L32 at Billericay.

The R.A.F. Display (June 30)

A FEW details of the programme for the 15th R.A.F. Display at Hendon may now be given. No. 25 (Fighter) Squadron will this year give an exhibition of aerobatics with all nine "Furies" linked together with elastic cords. No. 43 F.S. (also "Furies") will perform synchronised aerobatics, but instead of single machines meeting from opposite sides of the aerodrome and performing identical manœuvres, in this case each evolution will be carried out by a flight of three machines in formation. The wing of day bombers will be composed of Nos. 18 and 57 (Bomber) Squadrons from Upper Heyford, and Nos. 600 and 601 (Bomber) Squadrons from Hendon, all flying "Harts." The two latter belong to the Auxiliary Air Force, and are the City of London and County of London Squadrons respectively. A novel feature will be the use of the new C30 type of Autogiro for contact work, one of this type having been supplied to each of the five army co-operation squadrons in this country.



A FLEET T.S.R. : The letters represent Torpedo-carrying, Fleet-spotting, and Reconnaissance, and the machine is a product of the Gloster company. The engine is a Rolls-Royce experimental.
(FLIGHT *Photo.*)

The Industry

HENLYS' FREE TUITION

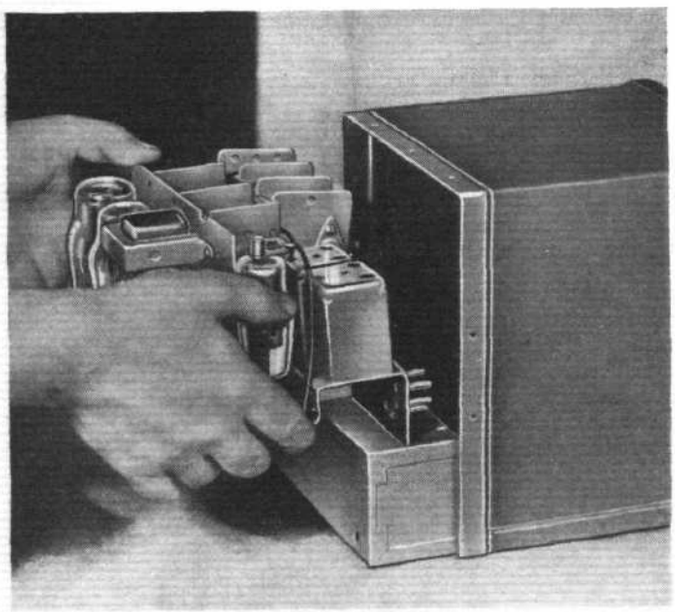
HENLYS, LTD., have announced a new scheme, which, in their opinion, should do much to popularise the private ownership of light aircraft. One of the most formidable of the bogies which is stifling private ownership is that of "learning to fly." The public over-estimates the difficulties, cost and the time required for tuition.

According to the new plan of Henlys, Ltd., anyone purchasing a machine, new or second-hand, from them, may receive, free of charge, up to eight hours' dual instruction (which should be enough for a beginner to take his "A" licence), a course in elementary air navigation and instruction in the maintenance of an aeroplane. Facilities are included in the scheme for taking out a first-class insurance policy. As with a car, any aircraft may be bought on the hire-purchase system. Cars and aircraft are accepted in part exchange.

Arrangements are being made with all the principal flying schools in the country for instruction to be given at an aerodrome near the home of the owner of the aircraft. Henlys, Ltd., are in a position to supply any make of new machine, and their range of second-hand aircraft is probably second to none in the country. At the time of writing, they have 33 second-hand machines for sale. These range from a Blackburn "Bluebird" ("Gipsy I") at £195 to an "Avro 626" ("Lynx") at £1,750.

MOTOROLA RADIO

MARKETED by the Motorola Distributing Co., of 182, Vauxhall Bridge Road, London, S.W.1, from which address full particulars may be obtained, this radio may be supplied in a variety of forms for use in cars, motor boats and aeroplanes. For aircraft these installations include a complete system, with head 'phones for any number of passengers and a set using a loud speaker for use in certain types of cabin machines.



COMPACT: This view shows admirably the size and simplicity of a Motorola set.

At present three models are available, the Model 44 five-valve type, in which the loud speaker, power supply and elimode system are contained in a metal case measuring 7¼ x 8 x 8½, the "Super Six" six-valve set for use with a 6 in. energised moving coil speaker, and the "77 A" seven-valve set with 8 in. moving coil speaker. One particularly interesting feature of the sets is the remote "one knob" control, with aeroplane style illuminated dial. This one knob switches on the set, selects the station required, controls volume, and switches off the set. Besides the elimode filter system, which excludes engine and ignition noises, sparking plug suppressors are fitted in the usual manner.

COMPER PROGRESS

SINCE the "Mouse" was first introduced, the Comper Aircraft Co., Ltd., has been putting the machine through very searching tests, and a number of small improvements have been incorporated which should add to the attractiveness of the machine. The company has taken the view that it was better to weed out all minor troubles before putting the machine into production, and thus avoid the sometimes annoying modifications deemed necessary after prolonged use. The modifications carried out have been in the nature of refinements, such as better luggage locker, a simplified undercarriage retractor operation, improved tail trimming, etc. The upholstery has been put into the hands of Rumbolds, with very good results.

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PUBLICATIONS RECEIVED

Aeronautical Research Committee Reports and Memoranda: No. 1564 *Further Experiments on a Model Fairey IIIF Seaplane.* By A. S. Batson and A. G. Gadd. August, 1932. Price 6d. net. No. 1565. *Elastic Instability of a Thin Curved Panel.* By S. C. Redshaw. May, 1933. Price 9d. net. No. 1568. *Calculation of Critical Reversal Speeds of Wings.* By D. M. Hirst. September, 1933. Price 1s. 3d. net. No. 1569. *The N.P.L. Open Jet Wind Tunnel.* By A. R. Collar. October, 1933. Price 1s. net. No. 1572. *An Improved Multitube Tilting Manometer.* By R. Warden. November, 1933. Price 6d. net. London: H.M. Stationery Office, W.C.2.

The National Physical Laboratory Report for the Year 1933. Price 13s. 0d. net. London: H.M. Stationery Office, W.C.2.

Der Private Luftverkehr. By Prof. Dr.-Ing. Carl Pirath. Berlin: Forschungsergebnisse Des Verkehrswissenschaftlichen Instituts Fur Luftfahrt An Der Technischen Hochschule Stuttgart. Heft 7.

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NEW COMPANIES REGISTERED

SHARWOOD MOTORS, LTD. Registered office: Craven Road, Ealing, W. 5.—Capital, £2,500 in £1 shares. To carry on the business of dealers in and manufacturers and hirers of automobiles, motor cars and cycles, aeroplanes, bicycles, etc. The permanent directors are: Thos. P. H. Sharwood, "Kerry Croy," 12, Erlesmere Gardens, Ealing, W.13; Fredk. A. Clark, "Stanmore," 92, Addiscombe Road, Croydon, Surrey. Secretary: H. R. P. Harris. Solicitors: Lambert Hale and Procter, Helena Chambers, Ealing, W.5.

WRIGHTSON AIR HIRE, LTD. Registered office: Grosvenor Mansions, 82, Victoria Street, S.W.1.—Capital, £5,000 in £1 shares. To establish, provide and maintain aerial conveyances of all kinds, to carry on the business of aerodrome and air transport service proprietors, etc. First directors are: Rodger G. Wrightson, 11t, Hyde Park Mansions, N.W.1, underwriter, Lloyd's, E.C.; Richard V. Wrightson, 33, Greystoke Lodge, Hanger Hill, Ealing, W.5, air transport contractor. Secretary: C. W. Wrightson.

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PATENT AERONAUTICAL SPECIFICATIONS

Abbreviations: Cyl. = cylinder; i.c. = internal combustion; m. = motors (The numbers in brackets are those under which the Specification will be printed and abridged, etc.)

APPLIED FOR IN 1932

Published May 17, 1934

33,445. W. A. GROCOCK. Propellers and the like for aircraft. (409,059.)

APPLIED FOR IN 1933

Published May 17, 1934

11,314. B. G. JUTTING. Wing-lift system for aircraft. (409,133.)